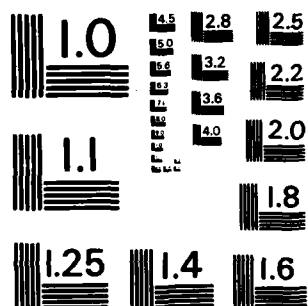END
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EDITSPEC SYSTEM MANUAL
VOLUME 1:   SYSTEM OVERVIEW

by

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February 1982

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ABSTRACT

This volume provides computer programmers with an overview of the EDITSPEC computer system. The system structure is presented in Chapter 1. Basic system execution programs are described in Chapter 2. Chapter 3 describes the backup and restoration procedures, while Chapter 4 contains the data conversion procedure.

Accession For

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FOREWORD

This investigation was performed for the Directorate of Military Construction, Office of the Chief of Engineers (OCE), under Project 4A762731AT41, "Design, Construction, and Operation and Maintenance Technology for Military Facilities"; Task T1, "Development of Automated Procedures for Military Construction"; Work Unit 009, "Computer-Based Specifications." The applicable QCR is 1.10.001. The OCE Technical Monitor was William Darnell.

The computer programs were written by Edgar Neely, Hans Wegener, Jayant Krishnaswamy, Anthony Wei, Shahid Siddiqi, Charles Wan, Arthur Davida, and several Multi-Systems, Inc., Cambridge, MA, staff members.

The study was performed by the Computer Aided Engineering and Architectural Design System Team (Ms. Janet Spoonamore, Chief), Facility Systems Division (Mr. E. A. Lotz, Chief), U.S. Army Construction Engineering Research Laboratory (CERL).

COL L. J. Circeo, Jr., is Commander and Director of CERL, and Dr. L. R. Shaffer is Technical Director.

PREFACE TO ALL EDITSPEC SYSTEM REPORTS

The purpose of the EDITSPEC system reports is to provide complete documentation to all personnel that must be involved with the EDITSPEC system. Such personnel include managers, specification writers, typists, computer systems analysts and computer programmers. Each personnel group requires different documentation. The reports required and the order of reading are shown in the table below.

PERSONNEL REPORTS	MANA-GERS	SPEC WRITERS	TYPISTS	SYSTEM ANALYST	PROGRAM-MER
1. Const. Spec. Prep within EDITSPEC system	1	1	1	1	1
2. Preparing a Guide Spec for EDITSPEC		4			
3. TRAINING COURSE MANUALS					
a. instructor					
b. introduction	2	2	2	2	2
c. specwriter		3		3	
d. internal commands		3			
e. Edit commands		4			
f. system commands		5			
4. USERS MANUAL		Reference	2	2	2
5. SYSTEM OVERVIEW			3	3	
6. SYSTEM DESIGN CONCEPTS			4	4	
7. TABLE HANDLER				5	5
8. DATA HANDLER				6	6
9. CONVERSION and EXTENSION			2	7	
10. Project Managers Procedures				8	
11. Operation & Maintenance Procedures			9		

CONTENTS

1 STRUCTURE

The reader should have a thorough understanding of the EDITSPEC User's Manual before reading this volume.

The EDITSPEC computer system is designed to operate as basic subsystems (Figure 1), which have been designed to be as machine-independent as possible and yet minimize the life-cycle cost of the system. The subsystems have been developed to operate under the standard compilers supported by all medium-sized computer systems.

A machine-independent scientific and engineering data handler has been developed to manipulate machine-dependent direct access storage and to provide application programs with machine-independent calling sequences. This subsystem will minimize program conversion problems when a new computer must be applied. The data handler, which is described in Volume IV, allows application programs to work with files or tables.

A machine-independent table handler has been implemented to allow application programs to access tables efficiently. The table handler and the tables used within the EDITSPEC system are defined in Volume III. The table handler programs apply the data handler application programs. The EDITSPEC computer programs apply both the data and the table handler application programs.

The EDITSPEC programs are logically divided into three structural groups as shown in Figure 2. The BASIC SYSTEM EXECUTION programs perform the normal day-to-day functions required to support the user; the SYSTEM BACKUP and RESTORATION programs perform periodic backups for portions of the system and provide data base restoration functions when the DATA CONVERSION programs provide functional assistance in converting the data base from one computer to another. The following chapters discuss each of the three divisions.

1

2 BASIC SYSTEM EXECUTION PROGRAMS

The BASIC SYSTEM programs are logically divided into the following four segments as shown in Figure 3.

Root Segment

The ROOT segment contains all programs of a general nature that are used to initialize the system and to process all commands, as well as programs used frequently by all segments. It can be logically separated into five program groups as shown in Figure 4. The SYSTEM CONTROL PROGRAM, called EDTSP, controls the flow of processing. The four high-level SYSTEM INITIALIZATION PROGRAMS are: SINIT, DKNIT, EINIT, and LOGOP. There is one high-level COMMAND ANALYSIS PROGRAM, called CMMND, and one high-level SYSTEM CLEANUP PROGRAM, called DKXIT. The BASIC APPLICATION PROGRAMS are listed in Table 1 and subroutine CMMND.

System Segment

The SYSTEM segment, which contains all programs required to process system commands, can be logically separated into four program groups as shown in Figure 5 and described in the user's manual. All high-level systems programs are called from the CMMND program.

Edit Segment

The EDIT segment, which contains all programs required to process the normal document editing functions, can be logically separated into seven program groups as shown in Figure 6 and described in the user's manual. All high-level programs are called from the CMMD program.

Print Segment

The PRINT segment, which contains all programs required to process the internal commands and to produce a final document, can be logically separated into five program groups as shown in Figure 7. The internal command programs are described in the user's manual. The two high-level programs for this segment are PRINT as in log and PPRO. The high-level programs for print initialization are PRINT1 and PAGEIN, and the high-level programs for text retrieval are GTLIN and SCOPY. PAGES controls the page layout and PGHDR controls the page printing.

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. DOD/DF-83/002c	2.	3. Recipient's Accession No. AD-A124 205

4. Title and Subtitle EDITSPEC: System Manual, Volume 1: System Overview	5. Report Date February 1982
	6.

7. Author(s) Edgar S. Neely, Jr.	8. Performing Organization Rept. No.

9. Performing Organization Name and Address Department of the Army Construction Engineering Research Laboratory P.O. Box 4005 Champaign, IL 61820	10. Project/Task/Work Unit No. 4A762731AT41/T1/009
	11. Contract(C) or Grant(G) No. (C) (G)

12. Sponsoring Organization Name and Address (same)	13. Type of Report & Period Covered
	14.

15. Supplementary Notes

For magnetic tapes, see

16. Abstract (Limit: 200 words)

The EDITSPEC System is an automated system designed to produce construction specifications from Corps of Engineers Guide Specifications. The System uses one central computer and a communications network to provide remote terminal access by Corps offices, nationwide to a central data base.

This volume provides computer programmers with an overview of the EDITSPEC computer system. The system structure is presented in Chapter 1. Basic system execution programs are described in Chapter 2. Chapter 3 describes the backup and restoration procedures, while Chapter 4 contains the data conversion procedure.

17. Document Analysis a. Descriptors

Construction Specifications
Guide Specifications
Military Construction

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages
	20. Security Class (This Page) UNCLASSIFIED	22. Price

(See ANSI-Z39.18) See Instructions on Reverse OPTIONAL FORM 272 (4-77) (Formerly NTIS-35) Department of Commerce

Table 1

Basic Application Programs

<u>ISUB COMMAND ROUTINE</u>

NO.

No.	Cmd	Name	No.	Cmd	Name
1	.ACCE	ACCES	101	.AA	AAFTR
2	.ACCO	ACCNT	102	.AB	ABEER
3	.CANC	CANCE	103	.AU	AUDIT
4	.DOCU	LEVEL	104	.BL	BLOCK
5	.DELE	DELET	105	.BN	BPAGN
6	.EDIT	EDIT	106	.FC	FLGCH
7	.FOOT	FOOT	107	.CH	CHANG
8	.GENE	GENE	108	.CO	COPY
9	.HEAD	HEAD	109	.CR	COPYR
10	.LOGON	LOGON	110	.CT	COPYT
11	.LOGOF	LOGOF	111	.CF	COPYF
12	.LIST	LIST	112	.EN	ENTER
13	.MESS	MESS	113	.ER	ERASE
14	.MERG	MEREGE	114	.EX	EXECT
15	.MONI	MONI	115	.FL	FLAG
16	.NEW	NEW	116	.FC	FLGCH
17	.PASS	PASS	117	.IX	INDES
18	.PGNF	NOFOR	118	.IN	INPUT
19	.PARA	PARFM	119	.IT	INSRT
20	.PRNE	PNOFM	120	.LC	LOGIC
21	.PPRO	PPRO	121	.LT	INCRL
22	.RACC	RACCE	122	.LT	LSTRL
23	.REPO	REPO	123	.LO	LOCAT
24	.RENA	RENAM	124	.MC	MYCYC
25	.SUPE	SUPER	125	.MO	MOVE
26	.SPEC	SPEC	126	.PT	PRNDX
27	.TABL	TABEM	127	.PT	PRTOC
28	.USER	USER	128	.PR	PRINT
29	.UDMF	UDMF	129	.PU	PULL
30	.UPDA	UPDA	130	.RL	RLOGC
31	.DEBU	DEBOG	131	.RC	RCOPY
32	.EXEC	EXECS	132	.RR	RREFS
33	.ASLE	ASLEEP	133	.RN	SEQUN
34	.TEST	TEST	134	.SC	SCHNG
35	.AWAK	AWAKE	135	.STOP	STORE
36	.DSCN	DSCN	136	.TC	TCONT
37	.SPAC	SPACE	137	.TS	TEXTS
38	.BACK	BACKUP	138	.UB	UNBLK
39	.REST	RESTOR	139	.DE	DEBOG
40	.KIND	KIND	140	.MONI	MONI
41	.DOC	KDOC	141	.DK	KDOC
42	.KAD	AKAD	142	.KL	KKDL
43	.KEYW	KEYW	143	.ZO	ZZ
44	.NKEY	NKEY	144	ZT	ZZ
45	.CLEA	CLEAR	145	.ZR	ZZ

46	.COPY	COPY	146	.ZS	ZZ
47	.KEYS	KEYS NEELY	147	.ZL	ZZ
48	.DSCR	DSCR	148	.ZM	ZZ
49	.DSDE	DSDE	149	.ZN	ZZ
50	.SUBM	SUBM	150	.GS	GS
51	.ZNEW	ZNEW	151	.WO	WRKCPY
52	.ZU	ZUPDA	152	.SE	SETCYC
53	.ZG	ZGENE	153	.CL	CL
54	.GUID	GUID	154	.TR	TROW
55	.DOCC	DOCC	155	.SW	SWSUBR
56	.COMM	COMM	156	.RW	RWSUBR
57	.CREA	CREATOR CHANGE	157	.PO	POSUBR
58	.ZUSR	ZUSER	158	.DU	DUSUBR
59	.ZACC	ZACCNT	159	.NN	NOTICE
60	.ZKND	ZKIND	201	.ZDDA	BAKUP0
61	.DATA	GSDSN	202	.ZDDB	BAKUP1
62	.DBAC	DOCUMENT BACUP	203	.ZDSA	BAKUP2
63	.ARCH	ARCH	204	.ZDSB	BAKUP3
64	.CARD	CARD	205	.ZSDA	BAKUP4
65	.NOTI	NOTIFY	206	.ZSDB	BAKUP5
66	.SIZE	SIZE	207	.ZSSA	BAKUP6
67	.PSCN	PSCNSR	208	.ZSSB	BAKUP7
68	.CSID	CSIDSR	209	.TCMP	TAPCMP
69	.APRO	APROSR			
70	.RRPR	RRPRSR			
71	.RPRI	RPRISR			

3 SYSTEM BACKUP AND RESTORATION PROGRAMS

Introduction

The EDITSPEC system provides functions that permit the recreation of any document, system table, and/or dataset to the state immediately before the data was inadvertently destroyed.

The EDITSPEC system provides three different backups for each system table and document. The time interval between backups will be called a period. EDITSPEC saves the last three backup periods. The documents can be recreated from any one of the three backups. This provides a triple backup system to hopefully provide a fail-safe system. Three logical functions must be performed:

1. Saving all correctly executed commands, except for list and print commands, executed since the last backup was made.

2. Periodically saving the data on a backup device.

3. Restoration of the data after a functional fatal error.

Fach of the three functions are discussed in the remaining sections of this chapter.

Saving All Correctly Executed Commands

The EDITSPEC system has been designed to function correctly with and without the backup system. The logical variable BAKUP located in /SYSTEM/ common is set to BAKUP is set to .TRUE. if the backup system is to be applied. The .BACK. command in the users manual should be referenced for a detailed description of backup files.

Dataset Naming Conventions

Each dataset is known to EDITSPEC by a one to six-character alphanumeric name.

All the backup datasets are prefixed with B1, as opposed to primary datasets which are prefixed with A1.

The predefined job control language, if applied, must contain the A1 and B1 datasets.

A1 datasets contain current data itself, and B1 datasets contain list of all correctly executed commands since the last system backup was done.

Normal Command Backup Procedures

After the processing of each command, the routine CMMND checks the variable CMDOK in /PARSC/ common to determine if the command worked properly and changed the data base in any manner. If the determination was positive routine, BKSAV is called to save the command in the correct backup files.

Backing Up System Commands

Each system command is stored in a backup file related to the data file being modified. Three data files: USER, DIRECTORY, and ACCOUNTS are interdependent and are backed up only in the USER file. All other commands relate to only one file.

The EDITSPEC system provides duplicate backup facilities for the entire system dataset. All commands changing any system file are also stored in a system dataset backup file.

Backing Up Document Commands

There are two categories of backup commands for each document. The first category consists of all commands that successfully modified the document data during the normal editing of the document by the user. The second category consists of all commands that have been issued to reference this document by other documents (i.e., a copy no-move command issued by a project document to a guide document).

When the document is created, the creator of the document can decide to backup all successfully executed commands that will be issued during future edits.

The creator has no control over the saving of the reference commands. These commands are automatically saved by the system to protect the other documents and ensure system integrity.

The EDITSPEC system provides duplicate backup facilities for the entire document dataset. All commands changing any document on the dataset are also stored in a document dataset backup file.

Periodic Data Backup

The EDITSPEC system will periodically backup the datasets (on files) to permit restoration when data is destroyed. The system datasets will be backed up twice daily. Datasets containing documents will be backed up daily if edited and requested by the creator of the documents.

After the periodic backup is performed, all correctly executed commands that have been saved on the permanent disk are destroyed.

Data Restoration

System tables and datasets will always be restored to the last correct command before the data destruction.

Document tables and datasets will be restored to the last backup performed and then extended to the last correct command if the user has saved the commands.

The EDITSPEC system saves the last one to three days of editing as backup for each document and system file. When a new day of editing is performed, the previous third day of editing on the backup is destroyed, the previous second from the last day becomes the new third day, the previous first day becomes the new second day, and the latest day becomes the new first day.

4 SYSTEM DATA CONVERSION PROGRAMS

When the EDITSPEC system is moved from one computer system to another, programs and data must be transferred efficiently. The system data conversion programs described in Appendix C and the conversion manual and shown in Figure 8 perform two logical functions: (1) the data output programs produce magnetic tapes from the current data base, and (2) the data input programs produce a new direct access data base from the tapes.

```
        ┌──────────────┐
    ┌──▶│   EDITSPEC   │
    │   │   COMPUTER   │
    │   │   PROGRAMS   │
    │   └──────────────┘
    │           │
    │           ▼
    │   ┌──────────────┐
    │   │   MACHINE -  │
    │   │ INDEPENDENT  │
    │   │    TABLE     │
    │   │   HANDLER    │
    │   └──────────────┘
    │           │
    │           ▼
    │   ┌──────────────┐
    └──▶│   MACHINE -  │
        │ INDEPENDENT  │
        │  S&E  DATA   │
        │   HANDLER    │
        └──────────────┘
               │
               ▼
        ┌──────────────┐
        │   STANDARD   │
        │  COMPILERS   │
        └──────────────┘
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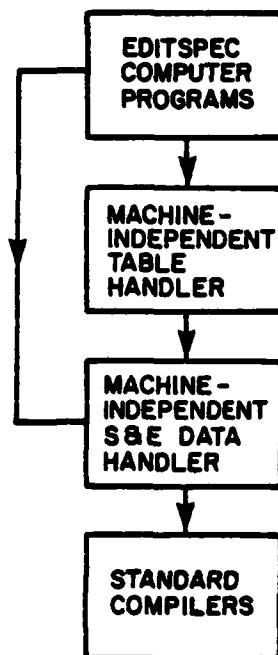
FIGURE I EDITSPEC SUBSYSTEMS

9
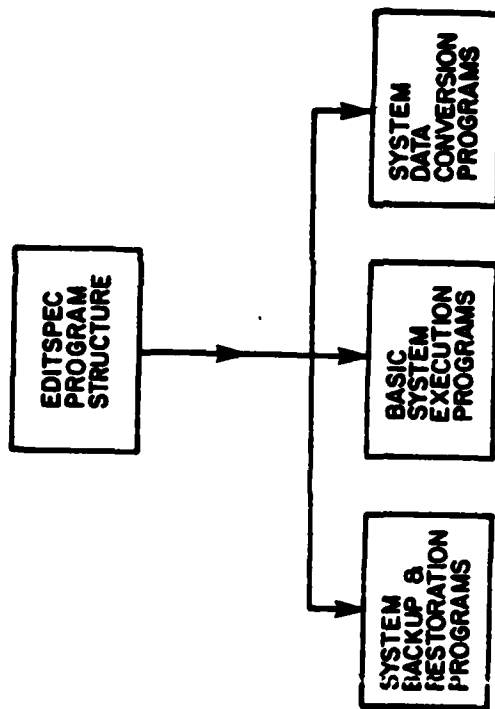
FIGURE 2 EDITSPEC PROGRAM STRUCTURE

EDITSPEC
PROGRAM
STRUCTURE

SYSTEM
BACKUP &
RESTORATION
PROGRAMS

BASIC
SYSTEM
EXECUTION
PROGRAMS

SYSTEM
DATA
CONVERSION
PROGRAMS

10
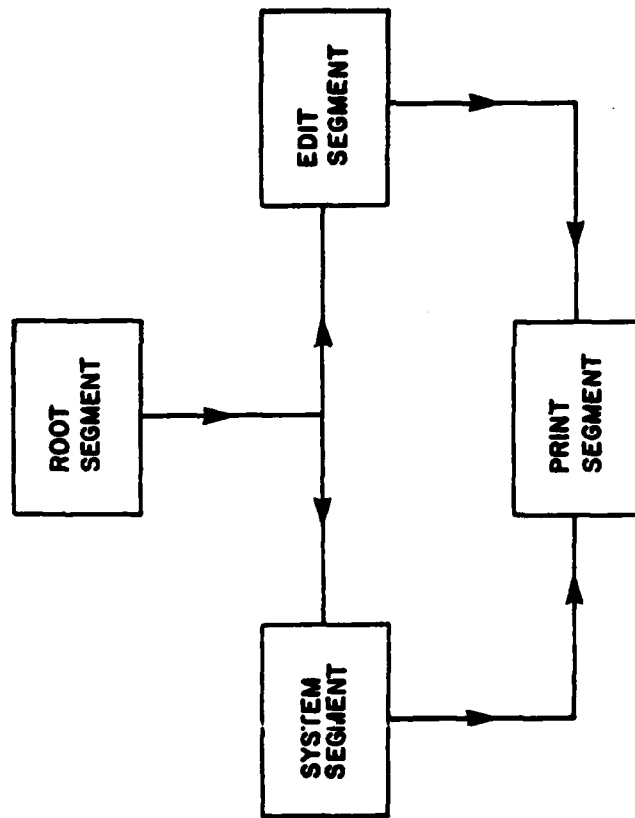
FIGURE 3 BASIC SYSTEM PROGRAM STRUCTURE

11
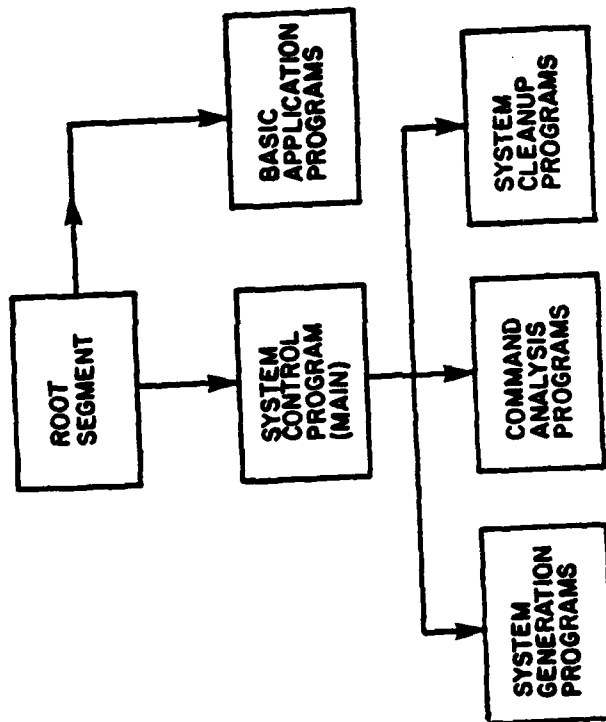
FIGURE 4 ROOT SEGMENT STRUCTURE (MAIN PROGRAM)

12
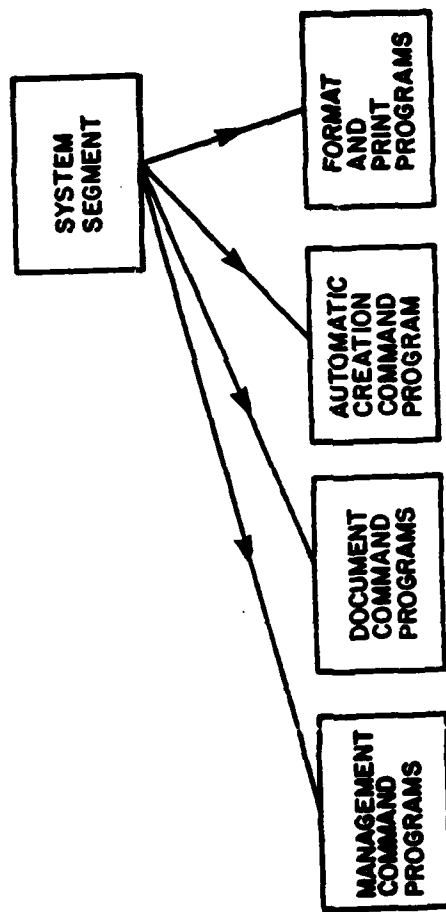
FIGURE 5 SYSTEM SEGMENT STRUCTURE
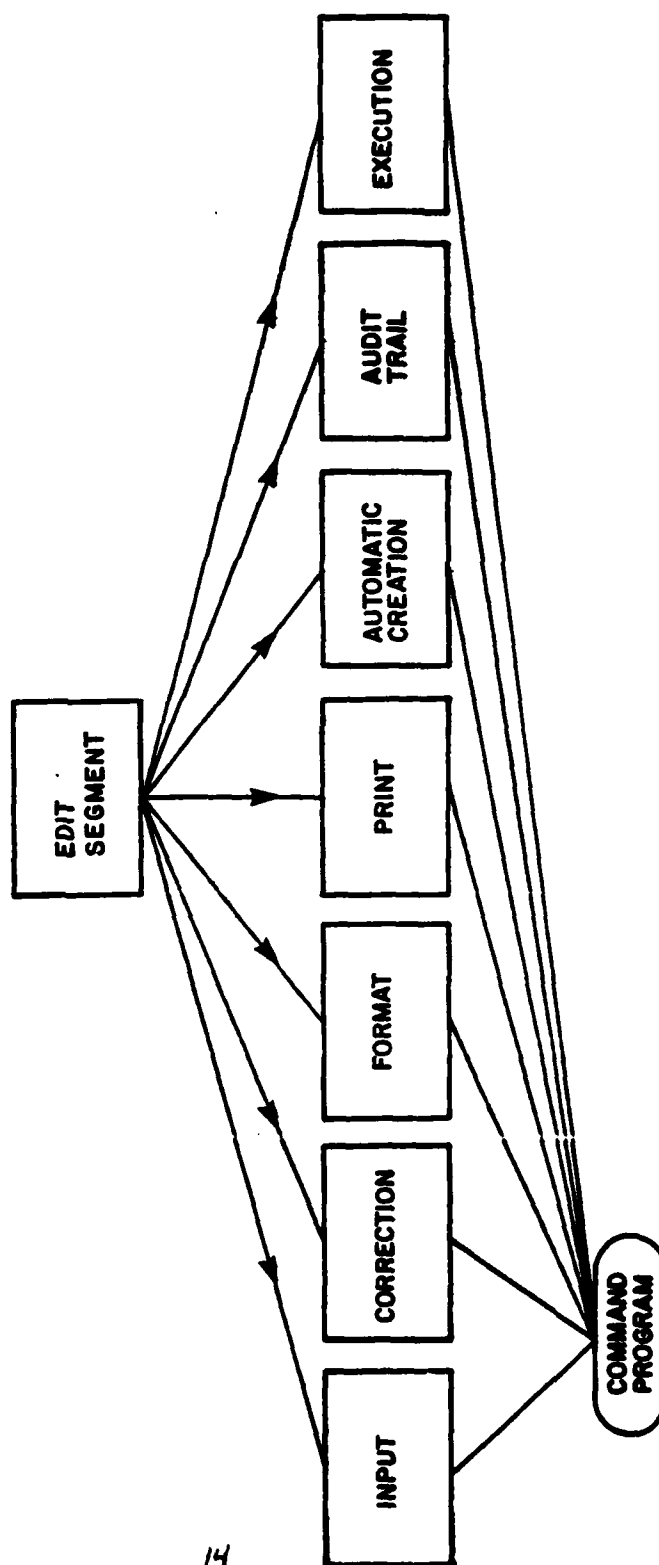
FIGURE 6 EDIT SEGMENT STRUCTURE

14
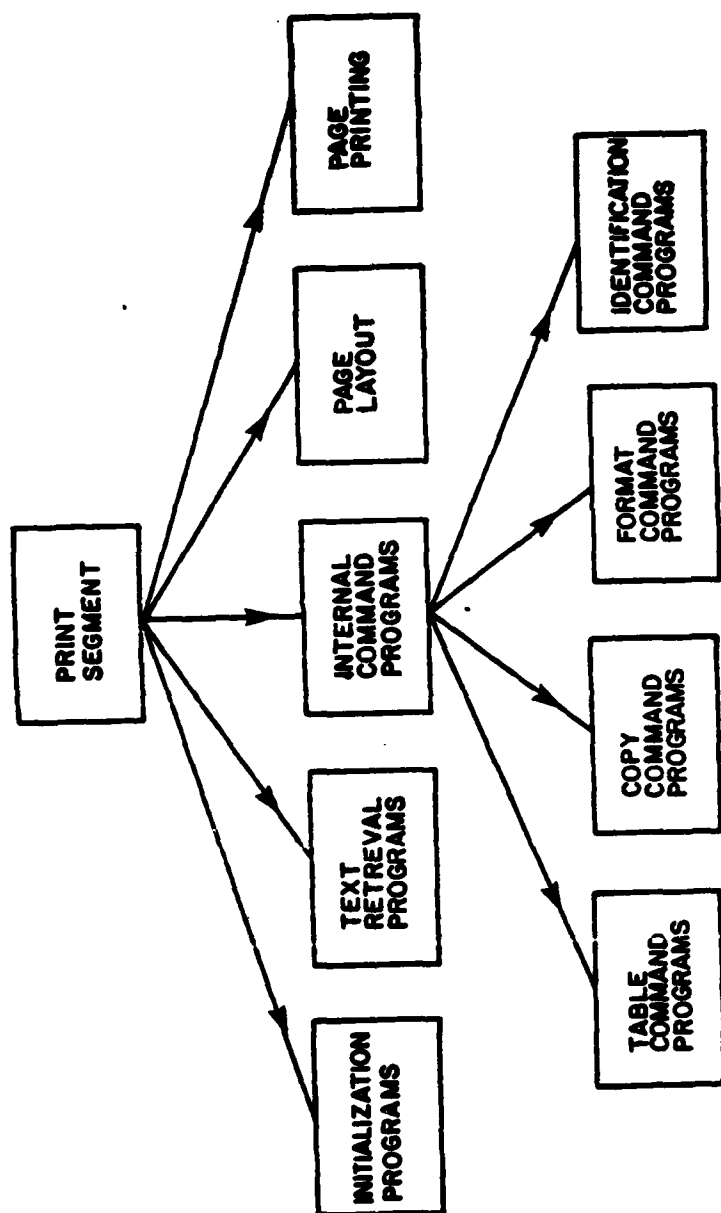
FIGURE 7 PRINT SEGMENT STRUCTURE

The structure shows:

- **PRINT SEGMENT** branches to:
  - INITIALIZATION PROGRAMS
  - TEXT RETREVAL PROGRAMS
  - INTERNAL COMMAND PROGRAMS
  - PAGE LAYOUT
  - PAGE PRINTING

- **INTERNAL COMMAND PROGRAMS** branches to:
  - TABLE COMMAND PROGRAMS
  - COPY COMMAND PROGRAMS
  - FORMAT COMMAND PROGRAMS
  - IDENTIFICATION COMMAND PROGRAMS
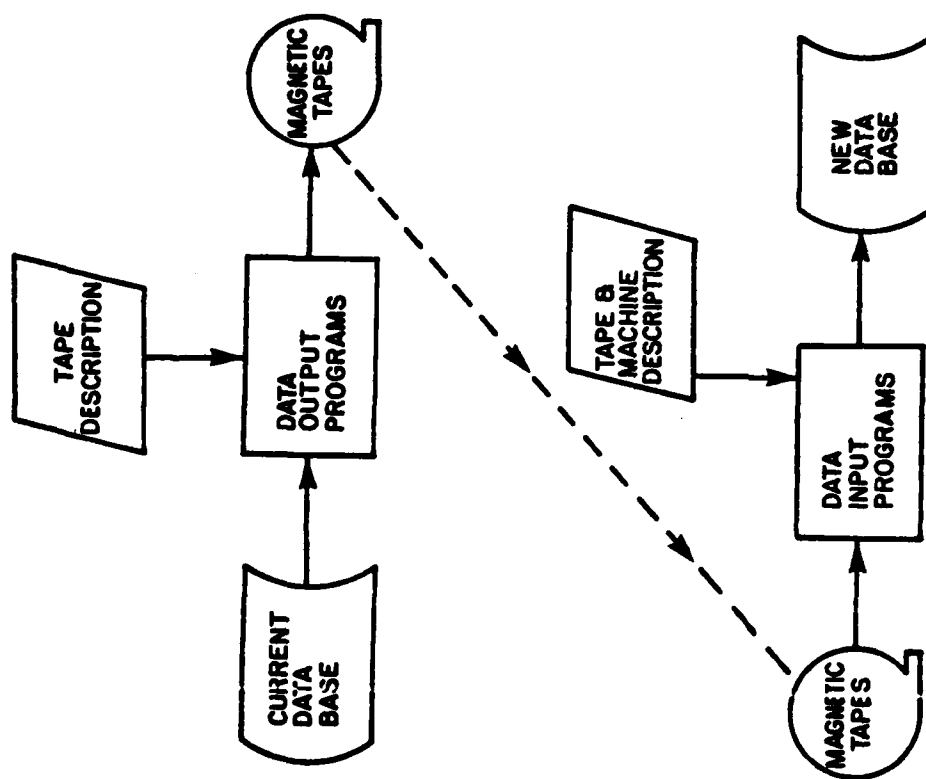
FIGURE 8 DATA CONVERSION

APPENDIX A: EDITSPEC FUNCTIONS AND SUBROUTINES

6 7	/ Number	Subroutine Name	Function
14 15 16 17 18 19 20 21	/ 1. / / / / / / /	AAFTR	ADDS TEXT AT THE END OF A TEXT LINE, EITHER BY MEANS OF A TEXT STRING GIVEN IN THE COMMAND AND/OR BY SPECIFYING A LINE NUMBER WHOSE TEXT IS TO BE ADDED AT THE END OF THE SAID LINE. WHEN BOTH A STRING AND A LINE NUMBER ARE GIVEN THEN THE STRING IS FIRST ADDED TO THE END THEN THE LINE AFTER THAT. THE ADDED LINE IS THEN DELETED FROM ITS ORIGINAL PLACE.
23 24 25 26 27 28	/ 2. / / / / /	ABEFR	ADDS TEXT AT THE BEGINNING OF A TEXT LINE BY MEANS OF EITHER A TEXT STRING OR ANOTHER LINE IN THE TEXT TABLE OR BOTH. WHEN BOTH ARE GIVEN FIRST THE TEXT STRING IS ADDED AT THE BEGINNING OF THE SAID LINE THEN THE OTHER LINE. THE ADDED LINE IS THEN ERASED FROM ITS ORIGINAL PLACE.
30	/ 3.	ACCESS	TO ADD OR REMOVE USER ACCESS TO DOCUMENTS OR ACCOUNTS
32	/ 4.	ACCIN	INTERPRET THE INPUT STREAM FOR THE ACCES AND RACCE COMMANDS.
34 35	/ 5. /	ACCNT	TO ADD, CHANGE, OR DELTE ACCOUNT NUMBERS WHEN AN 'AN' COMMAND IS INPUT.
37	/ 6.	AN2A1	TO CONVERT FROM (AN) FORMAT TO (A1) FORMAT; (N=NCU).
39	/ 7.	ASLEEP	
41 42 43	/ 8. / /	ASSEM	THIS PROGRAM ASSEMBLES PARAMETERS FOR SUBROUTINES LOCAT, CHANG, ERASE,BLOCK,UNBLOCK,INDEX FROM A STRING PASSED TO IT.
45	/ 9.	AUDIT	SETS THE AUDIT TRAIL SWITCH TO 'ON'.
47	/10.	AUDUP	TO UPDATE THE AUDIT TRAIL ACCORDING TO PASSED TYPE
49	/11.	BADCM	TO PRINT AN ERROR MESSAGE IN EVENT OF ILLEGAL COMMAND.
51	/12.	BKSAV	SAVE COMMAND ON BACKUP DATASET.
53	/13.	BLANK	THIS SUBROUTINE CALCULATES NUMBERS OF LEADING AND TRAILING
5	/		

18

		Subroutine	
10 11	/ Number	Name	Function
54 55 56	/ / /		BLANKS IN CHARACTER STRING USTR. ONE CHARACTER PER WORD, AND STORES THEM IN LBLNK AND LSBLN RESPECTIVELY. NBYTE IS THE NUMBER OF CHARACTERS IN USTR
58	/14.	BLINC	PAD A WORD WITH INTERNAL BLANK CHARACTERS
60	/15.	BLNKP	BLANK PAD A WORD
62 63	/16. /	BLOCK	PROCESS COMMAND .BL, I.E., INSERT *B* AND *BE* TO A LIST OF LINE NUMBER PAIRS.
65 66 67 68 69	/17. / / / /	BPAGN	THIS SUBROUTINE TAKES CARE OF COMMAND BN. IT CHECKS IF THE FORMAT IS ALREADY IN COMMON AREA (INPAGE). IF NOT THE INITIALIZED FORMAT WILL BE READ FROM DISK. THEN THE SUBROUTINE INTFM IS CALLED TO RESET THE PAGE NUMBER.
71 72 73 74 75	/18. / / / /	BPARN	THIS SUBROUTINE TAKES CARE OF EDIT COMMAND BP. IT CHECKS IF THE FORMAT IS ALREADY IN COMMON AREA (INPNFC). IF NOT, THE INITIALIZED FORMAT WILL BE READ FROM DISK. THEN THE SUBROUTINE INTFM IS CALLED TO RESET THE PARAGRAPH NUMBER.
77	/19.	BREAK	PROCESS THE .BC COMMAND IN EDITSPEC
79	/20.	CADIN	INTERPRET THE INPUT STRING FOR ACCOUNT OR SUPER COMMAND.
81	/21.	CANCE	TO REMOVE UP TO TWENTY USERS FROM THE EDITSPEC SYSTEM.
83	/22.	CDINT	
85	/23.	CFILL	PUT FORMAT SPACE FILLER INTO LINES ARRAY
87	/24.	CHANG	
89	/25.	CHIFT	SHIFT CHARACTERS TO EITHER THE LEFT OR THE RIGHT OR

2

5   /

19

5   /

10	/	Subroutine	
11	Number	Name	Function
130	/40.	DCDEC	
132	/41.	DCHEK	TO CHECK OUT EXTERNAL-REFERENCE TABLE FOR .DELE.
134	/42.	DEAUD	THIS SUBROUTINE DELETES OLD CYCLES IN AUDIT TRAIL TABLE.
135	/		BEGINNING WITH ICYCL
137	/43.	DEB	
139	/44.	DEBOG	TO CHANGE THE DEBUG PARAMETER.
141	/45.	DECOD	INTERPRET A COMMAND AND CALL THE PROPER SUBROUTINE
143	/46.	DEL	THIS SUBROUTINE 'DELETES' ALL CURRENT LINES BETWEEN TWO
144	/		GIVEN LINES, I.E. SETS ON THE SIGN BIT AND CHANGES
145	/		THE CYCLE NUMBER. ALSO IT WRITES ON THE DISK A
146	/		RECORD WITH NUMBERS OF THESE LINES.
148	/47.	DELCD	
150	/48.	DELET	TO DELETE A DOCUMENT.
152	/49.	DINIT	
154	/50.	DJUST	

5   /

21

| 10 | / | Subroutine | |
11	Number	Name	Function
156	/51.	DLCOP	TO DELETE LINE CONTAINING *CO OR *CT.
158	/52.	DLLIN	TO DELETE A LINE FROM THE TEXT-TABLE.
160	/53.	DRTER	ERASE AN ENTRY FROM DRT-TABLE.
162	/54.	DRTIN	TO ENTER A BACK-REFERENCE INTO DRT-TABLE.
164 165	/55. /	EDAUT	THIS SUBROUTINE RESTORED THE TEXT, LINE NUMBER TABLE, AUDIT TRAIL TABLE AS THEY WERE BEFORE CYCLE ICYCL.
167	/56.	EDIT	TO SET UP A DOCUMENT FOR EDITING COMMANDS.
169	/57.	EDTSPC	MAIN PROGRAM. CALLS VARIOUS ROUTINES.
171 172	/58. /	ED2MC	TO CONVERT A STRING FROM EDITSPEC FORMAT TO MACHINE (A1) FORMAT.
174	/59.	EINIT	EDITSPEC INITIALIZATION.
176 177 178 179 180	/59. / / / /	EN	THIS ROUTINE ENTERS ONE LINE OF TEXT INTO AN EXISTING DOCUMENT IF LNST=0 THEN IT INSERTS THE LINE AT THE END OF THE DOCUMENT. IF LNST O THEN IT INSERTS AT THE GIVEN LINE NUMBER OR IT TELLS THE USER THAT A LINE WITH THAT NUMBER ALREADY EXISTS
182 183 184 185 186 187	/60. / / / / /	ENTER	ENTERS ONE LINE OF TEXT INTO A DOCUMENT BY FIRST: CHECKING THAT THE CORRECT PARAMETERS WERE PASSED BY THE USER. THESE PARAMETERS ARE:THE LINE NUMBER, TEXT SEGMENT ID AND THE TEXT LINE ITSELF. SECOND: WE CALL THE EN SUBROUTINE WHICH ACTUALLY LOADS THE LINE
189 190 191 192 193	/61. / / / /	ERASE	THIS SUBROUTINE 'ERASES' THE CHARACTER STRING (CHS) FROM VARIOUS SECTIONS OF THE TEXT, WHICH ARE DEFINED EITHER BY MEANS OF TEXT SEGMENTS OR BY NUMBERS OF STARTING AND ENDING LINES. IT ALSO STORES THE NUMBERS OF LINES WHICH ARE ERASED.
195	/62.	EXECS	TO EXECUTE COMMANDS FROM A DOCUMENT (IN SYSTEM MODE).
197 198	/63. /	EXECT	TO EXECUTE COMMANDS FROM CURRENT DOCUMENT (IN EDIT MODE).

22

5   /

10 /	Subroutine		
11	Number	Name	Function

200	/64.	EX2IN	CONVERTS ONE CHARACTER AT A TIME FROM MACHINE INTERNAL
201	/		CODE TO EDITSPEC INTERNAL CODE
203	/65.	FCNT	TO PICK UP ANY NUMERIC PART OF THE JUSTIFICATION
204	/		OR *SL COMMANDS - ALSO LOCATE END OF STRING
206	/66.	FDAC	TO FIND DOCUMENT ACCESS CODE.
208	/67.	FDIT	TO SET UP A SECONDARY EDIT DOCUMENT.
210	/68.	FDSBK	TO GET DATASET NUMBER FROM DATASET NAME (BACKUP - NOT MAIN)
212	/69.	FDSMN	TO GET DATA SET NUMBER FROM DATASET NAME (MAIN - NOT ~~MAIN~~ BACKUP)
214	/70.	FLAG	THIS ROUTINE PROCESSES THE .FL CMD AND IF THE SYNTAX IS
215	/		CORRECT, ENTERS THE GIVEN FLAG ID AND THE CHOICE AND
216	/		DESCRIPTION CHARACTER STRINGS IN THE FLAG TABLE
218	/71.	FLGCH	THIS ROUTINE PROCESSES .FC COMMAND

~~220 /72. FLSEC~~

| 222 | /73. | FNDLN | TO FIND THE RECID OF A LINE NUMBER IN A DOCUMENT. |
| 224 | /74. | FOOT | |

| 226 | /75. | FORM | |

5   /   23

10 /	Subroutine		
11 Number	Name	Function	

Number	Subroutine Name	Function
247 / 248 /		LINE. FROM THE LINE NUMBER TABLE (LNT). IT SETS IDST=0 IF THERE IS NO SUCH LINE IN LNT.
250 /86.	IDINP	TO INTERPRET THE INPUT STRING FOR THE USER AND CANCEL COMMANDS.
252 /88.	IMASK	
254 /87.	INCRL	
256 /88. 257 / 258 / 259 / 260 / 261 / 262 / 263 /	INDEX	ADDS A ' *IX INDEX ID;' BEFORE A SPECIFIED STRING IN THE TEXT IN ALL AREAS SPECIFIED. IT ALSO ADDS A '* ' THE STRING. THE AREAS ARE GIVEN AS LINE NUMBERS, PAIRS OF LINE NUMBERS OR TEXT SEGMENT ID'S. DURING THE PRINT ROUTINE ,THE PAGE NUMBERS THAT INCLUDE THE STRING WILL BE ADDED TO THE INDEX TABLE NUMBER 'INDEX ID',INDEX ID IS A 1 DIGIT INTEGER BETWEEN 1-9. THE DEFAULT VALUE FOR INDEX ID IS 1.
265 /89.	INITL	
267 /90. 268 / 269 / 270 / 271 / 272 / 273 / 274 / 275 / 276 / 277 /	INPUT	THIS SUBROUTINE IS CALLED BY EDIT. IT READS DATA AND SEPARATES TEXT AND COMMANDS. FOR THAT IT CALLS SUBROUTINE CONV, WHICH RECOGNIZES COMMAND'S STRINGS. INPUT STORES TEXT IN TEXTFILE, COMMANDS IN COMMAND TABLE. EACH COMMAND FORMS ONE RECORD IN THIS TABLE. THE LAST CHARACTER IN EACH COMMAND IS A PERIOD. A COMMAND IS STORED IN PACKED FORM WITHOUT TRAILING BLANKS. TEXT LINES ARE STORED WITH TWO TRAILING BLANKS AFTER A PERIOD, ONE TRAILING BLANK AFTER ANY OTHER CHARACTER. TEXT IS STORED IN PACKED FORM. ONE OTHER RESTRICTION APPLIES - A PERIOD CANNOT BE IN THE FIRST COLUMN SINCE A PERIOD IN THE FIRST COLUMN OF THE TEXT

5 /

10 11	/ Number	Subroutine Name	Function
278 279 280 281 282 283 284 285 286 287 288 289. 290	) / / / / / / / / / / / /		INDICATES A COMMAND LINE. ALL COMMAND LINES ARE EXPECTED TO LEAVE A PERIOD IN THE FIRST COLUMN, INCLUDING CONTIN- UATION COMMAND LINES. INPUT GENERATES A LINE NUMBER FOR EACH LINE OF THE TEXT. THIS LINE NUMBER IS STORED AS THE FIRST WORD IN EACH TEXT LINE RECORD. THE LINE NUMBER AND CORRESPONDING RECORD ID ARE STORED IN THE LINE NUMBER TABLE. INPUT ALSO GENERATES A LINE NUMBER FOR EACH COMMAND AND STORES THESE LINE NUMBERS AND CORRESPONDING RECORD IDS IN THE COMMAND LINE NUMBER TABLE. INPUT USES TABLE NAMES (IN COMMON) AS INFORMATION WHICH HAS BEEN ESTABLISHED BEFORE. D THE ONLY DATA INPUT REQUIRES IS THE TABLE NAMES IN COMMON.
292 293 294 295 296 297 298 299 300 301	/91. / / / / / / / / /	INSRT	INSERTS A GIVEN TEXT STRING IN SPECIFIED AREAS OF THE TEXT AFTER A CERTAIN GIVEN STRING. IF THE STRING AFTER WHICH THE NEW STRING IS TO BE CONCATENATED IS NOT GIVEN THEN THE INSERTION STRING IS ADDED AT THE END OF EACH SPECIFIED AREA. THE AREA CAN BE SPECIFIED BY THE USER AS A GROUP OF LINE NUMBERS, LINE NUMBER PAIRS OR TEXT SEGMENT ID'S OR ALL THREE TOGETHER. IF THE AREA IS NOT GIVEN , THE INSERTION STRING IS ADDED AT THE END OF THE LAST LINE OF THE DOCUMENT.
303 304 305	/92. / /	INTER	THIS ROUTINE COPIES A NUMERIC STRING FROM (STRNG) AND PLACES IT INTO THE (DIGIT) ARRAY. THE (DIGIT) ARRAY IS THEN CONVERTED INTO A NUMBER.
307 308 309 310	/93. / / /	INTFM	THIS SUBROUTINE INITIALIZES A PAGE OR PARAGRAPH NUMBERING FORMAT ACCORDING TO THE COMMAND IN STRNG (SEE COMMON /PARSC/.) THE COMMAND MAY BE .BN, *BN, .BP OR *BP.
312 313 314 315 316	/94. / / / /	INTGR	THIS ROUTINE FORMS THE ACTUAL NUMBER FOR THE STRING AND TRANSLATES THE EDITSPEC INTERNAL REPRESENTATION OF NUMERICAL CHARACTERS INTO THE MACHINE INTERNAL REPRESENTATION OF THE ACTUAL NUMERICAL VALUE BEING REPRESENTED.
318 319 320	/95. / /	INUS4	TO INSERT A TYPE 4 RECORD INTO THE USER TABLE. (TYPE 4 RECORD IS MESSAGES TO USER). SENDER OF MESSAGE IS LOGGED-ON-USER.

5   /   26

10 11	/ Number	Subroutine Name	Function
321 /			RECID (FIRST ARGUMENT) IS ENTRY IN USR-TABLE
322 /			OF RECEIVERS TYPE 1 DATA RECORD.
324	/96.	IN2EX	
326	/97.	JCOPY	
328	/98.	JIND	
330	/99.	JLNFL	TO BUILD UP THE PRINT LINE IMAGE FOR A TABLE ROW
332	I00.	JNEXT	TO RETURN A SEQUENTIAL LIST FROM AN ABBREVIATED LIST
334	I01.	JNUM	TEST CHARACTER STREAM AND RETURN NUMBER VALUE
336	I02.	KLOCT	TEST LINES FOR THE PRESENCE OF ANY UNDERLINES
338	I03.	LALPH	
340	I04.	LARAB	
342	I05.	LAUDG	

27

5   /

10 11	Number	Subroutine Name	Function
344	I06.	LAUDO	
346	I07.	LAUDT	TO LIST THE AUDIT TRAIL TABLE - TEXT.
348 349	I08. /	LBICD	TO SCAN STRING AND BREAK IT INTO SEGMENTS OF LENGTH SGLEN TERMINATIONG WITH THE LAST BLANK
351 352 353 354	I09. / / /	LCHAR	THIS PROGRAM IS USED BY SUBROUTINE ASSEM WHEN A LOCATION OF THE REPLACEMENT STRING IS GIVEN BY THE· LAST THREE OR MORE CHARACTERS AND THE NUMBER OF THE FIRST LINE
356	I10.	LCHECK	
358	I11.	LCONT	
360 361 362 363 364 365 366 367 368	I12. / / / / / / / /	LDHAR	THIS PROGRAM IS CALLED BY ASSEM ROUTINE. IT IS CALLED WHENEVER THE STRING TO BE HANDLED IS GIVEN IN EITHER OF THE FOLLOWING THREE FORMS: (ALPHA)**(ALPHA):IN THIS CASE THE WHOLE STRING IS COPIED INTO STRNG BEFORE RETURNING. ITST IS SET TO 0 INDICATING THIS CASE TO SEARC. **(ALPHA): ITST IS SET TO 1 INDICATING THIS SITUATION TO SEARC . (ALPHA)**: ITST IS SET TO 2.
370 371	/ /		ICNT WILL BE SET TO THE INDEX INTO ISLN WHERE THE FIRST OCCURANCE OF THE STRING WAS FOUND. occurrence
373	I13.	LDOCU	

5   /

10 11	/ Number	Subroutine Name	Function
375	I14.	LERCD	LIST EXTERNAL REFERENCE (COPY TEXT) TABLE.
377	I15.	LERCT	
379	I16.	LERLC	
381	I17.	LERSN	
383	I18.	LFHAR	
385	I19.	LFLAG	
387	I20.	LIACO	
389	I21.	LICHR	

5   /   29

10 11	/ Number	Subroutine Name	Function
391	ɪ22.	LICUS	
393	ɪ23.	LIDIR	
395	ɪ24.	LIDOC	
397	ɪ25.	LIDTA	
399	ɪ26.	LIFOT	
401	ɪ27.	LIHAD	
403	ɪ28.	LIMIT	
405	ɪ29.	LINDE	

5   /   30

10 11	/ Number	Subroutine Name	Function
407	Y30.	LINNO	
409	Y31.	LIPARA	
411	Y32.	LIPGF	THIS SUBROUTINE LISTS THE PAGE NUMBERING FORMAT TABLE.
413 414	Y33. /	LIPNF	THIS SUBROUTINE LISTS THE PARAGRAPH NUMBERING FORMAT TABLE.
416	Y34.	LIPRJ	
418 419 420 421 422 423	Y35. / / / / /	LIST	THIS SUBROUTINE TAKES CARE OF THE SYSTEM COMMAND .LIST. THIS SYSTEM COMMAND ALLOWS THE CERTIFIED USER TO LIST INFORMATION LOCATED IN THE SYSTEM TABLES. THIS SUBROUTINE WILL TRANSFER CONTROL TO AN APPROPRIATE SUBROUTINE ACCORDING TO THE PARAMETER SPECIFIED IN THE COMMAND:

		PARAMETER	SUBROUTINE NAME
425	/		
428	/	ACCO	LIACO
429	/	CHAR	LICHR
430	/	CUSR	LICUS
431	/	DATA	LIDTA
432	/	DIRE	LIDIS
433	/	DOCU	LIDOC
434	/	FOOT	LIFOT
435	/	HEAD	LIHAD
436	/	PARF	LIPAR
437	/	PGFM	LIPGF
438	/	PNFM	LIPNF

5   /   31

10 /	Subroutine		
11 Number	Name	Function	
439 /		PROJ	LIPRJ
440 /		TABL	LITBL
441 /		USER	LIUSR
444 Ƴ36.	LITBL		
446 Ƴ37.	LIUSR		
448 Ƴ38.	LIOGI		
450 Ƴ39.	LNCLN	TO CHECK THE EXTERNAL BLANK CHARACTERS BETWEEN	
451 /		CHARACTER STRINGS TO INSURE THAT THE PROPER SPACING	
452 /		IS PRINTED.	
454 Ƴ40.	LNINC		
456 Ƴ41.	LNCIM		
458 Ƴ42.	LNXFR		

5   /   32

10 11	Number	Subroutine Name	Function
460 461 462 463 464	143.	LOCAC	THIS ROUTINE ACCEPTS INTERNAL STRING (INSTR) AND UNPACKS THEN TO ECI INTERNAL FORM STARTING FROM LOCATION LSTRT. IT ALSO PARSES THE NESTED INTERNAL COMMANDS AND PUTS THEM INTO COMMAND BUFFER (CMBUF) AND STACK FOR LATER PROCESSING.
466 467 468 469 470	144.	LOCAH	THIS ROUTINE ACCEPTS INTERNAL STRING (INSTR) AND UNPACKS THEM TO ECI INTERNAL FORM STARTING FROM LOCATION LSTRT. IT ALSO PARSES THE NESTED INTERNAL COMMANDS AND PUTS THEM INTO COMMAND BUFFER (CMBUF) AND STACK FOR LATER PROCESSING.
472 473 474 475 476 477 478 479 480 481 482 483 484 485 486	145.	LOCAT	THIS SUBROUTINE SEARCHES THE OCCURENCES OF THE CHAR STRING (CHS) WHICH IS PLACED IN ARRAY TSID. FOUR CHARACTERS PER WORD. IN THE ENDING LINES OR BY THE TEXT SEGMENTS ID. ARRAY ISLN CONSISTS OF THE STARTING LINES NUMBERS, ARRAY IELN - ENDING LINES NUMBERS, ARRAY TSID - TEXT SEGMENTS ID. NLIFO IS THE COMMON DIMENSION OF ISLN AND IELN, NTEFO IS THE DIMENSION OF TSID, NCHAR IS A NUMBER OF CHARACTER IN CHS. THE OUTPUT OF THIS SUBROUTINE ARE TWO ARRAYS, WHICH WILL BE PRINTED AND WILL INDICATE ALL OCCURENCES OF THE CHS BY LISTING THE STARTING LINE NUMBER, THE NUMBER OF THE FIRST CHARACTER OF CHS IN THE STARTING LINE, THE LAST LINE NUMBER, THE NUMBER OF THE LAST CHARACTER OF CHS IN THE LAST LINE FOR EACH OCCURENCE. LIST OF VARIABLES ISLN - ARRAY, CONSISTING OF THE STARTING LINES NUMBERS FOR THE TEXT LOCATIONS
488	146.	LOGMS	TO WRITE OUT MESSAGE FROM THE ARRAY DR4USR.
490	147.	.OGOF	LOGS A USER OFF EDITSPEC SYSTEM
492 493 494 495 496	148.	LOGON	LOGS A USER ONTO THE EDITSPEC SYSTEM. IF THIS IS THE FIRST USER EVER, CREATE SYSTEM TABLES, AND ENTER USER-ID AND ACCOUNT-NUMBER INTO USR-TABLE, ACS-TABLE IF USR-TABLE ENTRY EXISTS, PRINT OUT ANY MESSAGES IN IT. IN ANY CASE, SET LOGGD = ID OF ENTRY IN USR-TABLE.
498	149.	LOGOP	TO PRINT EDITSPEC HEADING
500	150.	LPULL	

5   /   33

10 11	/ Number	Subroutine Name	Function
502	Y51.	LROMA	
504	Y52.	LSACC	PRINT THE ACCOUNTS TABLE
506	Y53.	LSAUD	
508	Y54.	LSCAN	
510	Y55.	LSCOM	LIST THE COMMAND TABLE
512	Y56.	LSDOC	PRINT THE SYSTEM DOCUMENT DIRECTORY
514	Y57.	LSLEU	
516	Y58.	LSLGC	PRINT THE LOGIC CONDITIONS TABLE
517	I59.	LSCIN	
519	Y60.	LSPNF	
521	Y61.	LSSAP	PRINT THE SUPERVISORS TABLE
523	Y62.	LSSEG	
525	Y63.	LSTBL	THIS ROUTINE CALLS THE DOCUMENT TABLE LISTING

5   /   34

10 11	Number	Subroutine Name	Function
526 527 528 529	/ / / /		ROUTINES. THERE ARE 15 SUCH ROUTINES EACH RESPONSIBLE TO LIST ONE DOCUMENT TABLE. TRANSFER OF CONTROL IS DONE BY CHECKING THE TABLE NAME GIVEN BY THE USER.
531	164.	LSTXT	PRINT THE TEXT TABLE
533	165.	LSUSR	TO LIST ALL INFORMATION IN THE SYSTEM USER TABLE.
535 536 537	166. / /	LTEX	TO LIST THE TEXT TABLE WITH UPPER CASE LETTERS REPRESENTED AS THE CENT SIGN AND THE LOWER CASE LETTER.
539	167.	LTYPD	
~~541~~	~~168.~~	~~MAIN~~	
543	169.	MARGN	
545	170.	MATCH	TO DEFINE ISUB (COMMAND CODE).
(547)	171.	MCMP	*TO COMPARE A STRING WITH AN MASK 'ALL' MASK.*
549 550	172. /	MCZED	TO CONVERT A STRING IN MACHINE FORMAT (A1) TO EDITSPEC FORMAT.
552	173.	MERGE	
5	/		35

10 11	/ Number	Subroutine Name	Function
554 555	174. /	MESS	THIS SUBROUTINE TAKES CARE OF THE COMMAND .MESS. IT CHECKS THE RECEIVER ID LIST AND SEND MESSAGE TO THEM.
557	175.	MONI	
559	176.	MOVE	TO MOVE TEXT FROM ON LOCATION TO ANOTHER.
561 562	177. /	NAMIN	TO INTERPRET THE INPUT STREAM FOR COMMANDS REQUIRING JUST ONE FIELD, OF 12 CHARACTERS.
564	178.	NCMP	*To Compare 2 Strings*
566	179.	NEW	TO CREATE A NEW DOCUMENT.
568	180.	NFLDS	
570 571	181. /	NLOCT	*R* TO LOCATE THE FIRST OCCURENCE OF CHARACTER 'CHAR' AFTER CHARACTER 'L1' IN UNPACKED ARRAY 'CHART'
573	182.	NOFOR	THIS SUBROUTINE TAKES CARE OF THE SYSTEM COMMAND .PGNF.
575	183.	NO2IC	*To CONVERT A BINARY NUMBER TO A CHARACTER* ~~SUBROUTINE NO2IC(NUMBR,CHARS,NCHAR)~~
577 578	184. /	NWDSF	RETURN THE NUMBER OF FULL WORDS REQUIRED TO HOLD 'N' CHARACTERS
580 581 582 583	185. / / /	PACK	PACK NUM CHARACTERS INTO THE STRING DEST. STARTING WITH CHARACTER L2 OF DEST. THE CHARACTERS ARE TAKEN FROM THE LEAST SIGNIFICANT CHARACTER OF THE ELEMENTS OF THE ARRAY SOURC, STARTING WITH STANDARD UNIT L1.
585	186.	PARAG	

5   /

10 / Number	Subroutine Name	Function
587 187.	PARAN	
589 188.	PARFM	TO PROCESS THE PARAGRAPH FORMAT COMMAND (PF)
591 189.	PASS	TO CHANGE THE USER PASSWORD.
593 190.	PGHDR	
595 191.	PGPRT	
597 192.	PLUEL	
599 193.	PMCHK	
601 194.	PNOFM	THIS SUBROUTINE TAKES CARE OF THE SYSTEM COMMAND .PRNF.
603 195.	PPRO	

5   /   37

10 11	/ Number	Subroutine Name	Function
605	Ƴ96.	PRMON	
607	Ƴ97.	PRNDX	
609	Ƴ98.	PRTOC	
611 612	Ƴ99. /	PSTRP	REMOVE ANY LEADING OR TRAILING BLANKS FROM CHARS. RECOMPUTE LEN.
614	Z00.	PULL	PROCESS THE -PU COMMAND...
616	Z01.	RACCE	
618	Z02.	RCINS	
62U	Z03.	RCDEL	

5   /   38

Number	Subroutine Name	Function
622 204.	RCNVR	
624 205.	RCNV2	
626 206.	RCOPY	
628 207.	RDLIN	TO GET A LINE OF COMMAND TEXT IF GCODE IS 1
629 /		AND TO BACKSPACE IF GCODE IS ZERO, SO THAT A
630 /		SUBSEQUENT RDLIN(1) WOULD RETURN THE SAME LINE
631 /		RETURNED PREVIOUSLY.
633 208.	READ	TO READ A LINE.
635 209.	READE	TO OBTAIN A COMMAND LINE DURING .EX. COMMAND.
637 210.	READI	
639 211.	READS	TO OBTAIN A COMMAND LINE DURING .EXEC. COMMAND.
641 212.	REAUP	THIS SUBROUTINE RETRIEVES CERTAIN LINES FROM A PREVIOUS CYCLE
643 213.	RENAM	TO RENAME A DOCUMENT AND ALL REFERENCES TO IT
645 214.	REPO	

10 /
11

5   /

39

APPENDIX B: SYSTEM BACKUP FUNCTIONS AND SUBROUTINES

APPENDIX C: DATA CONVERSION FUNCTIONS AND SUBROUTINES

41
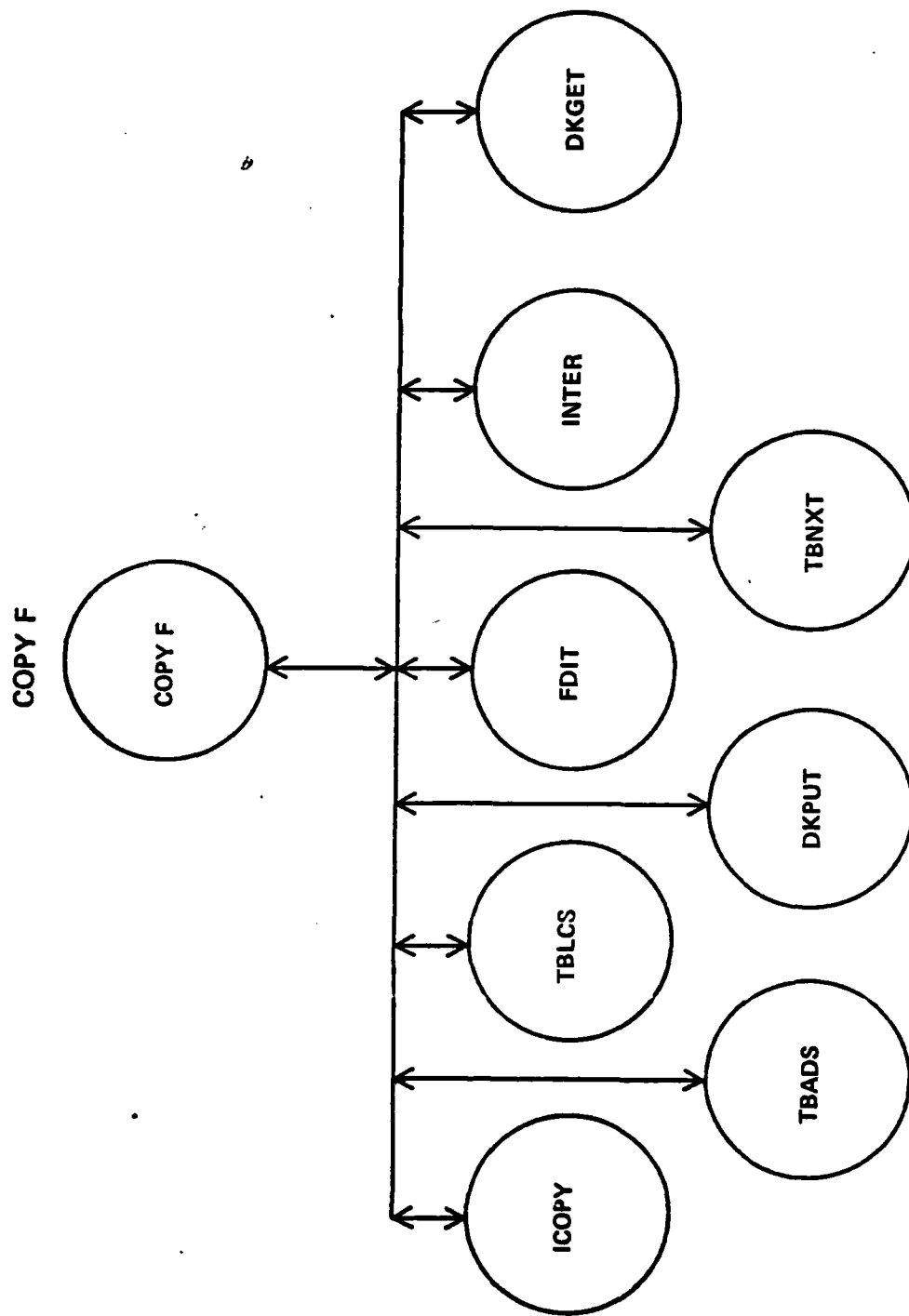
COPY F

COMMAND.CF.

Figure   Command .CF.   Sheet 1 of 1

42

CHANGE COMMAND

SHEET 1 OF 1

43
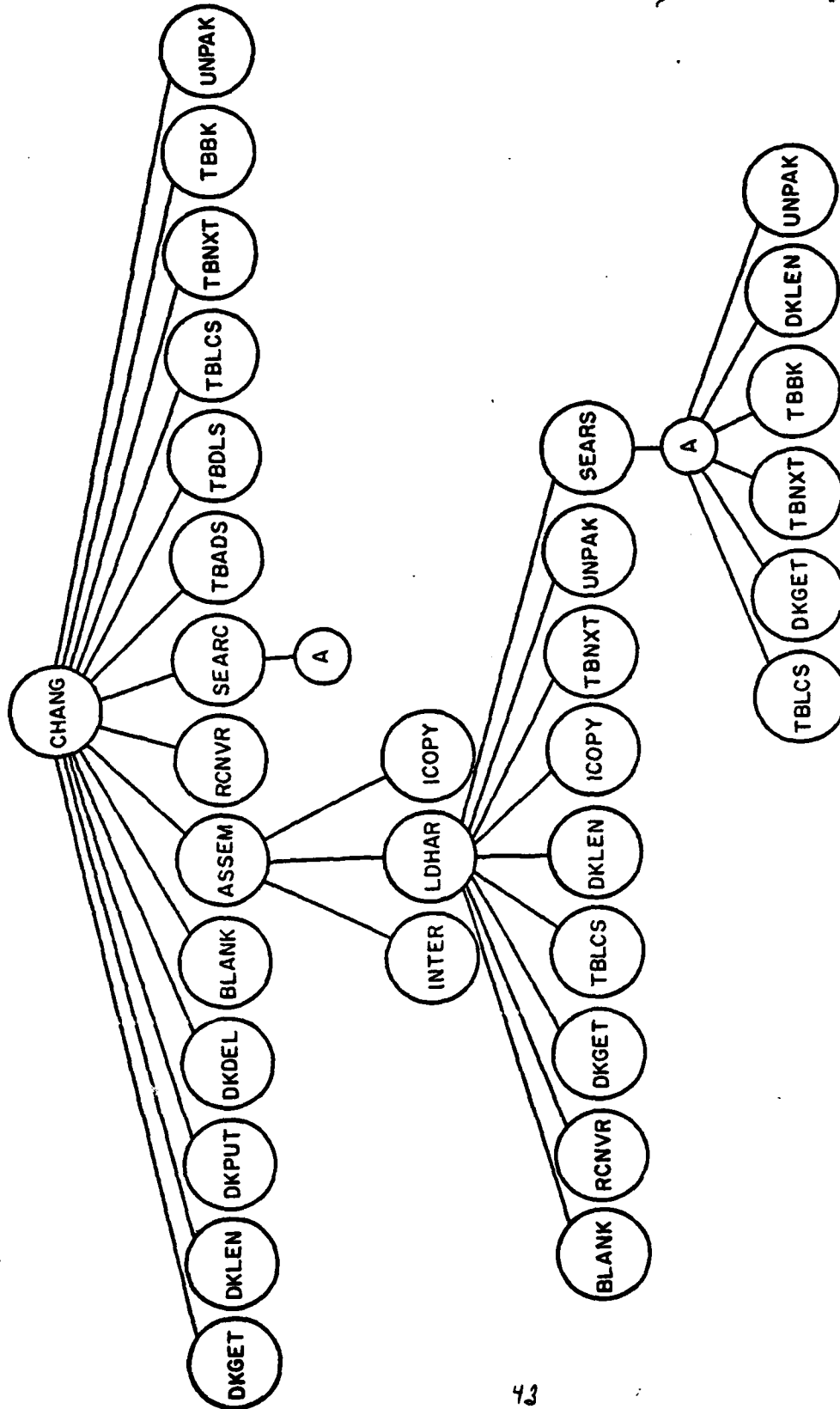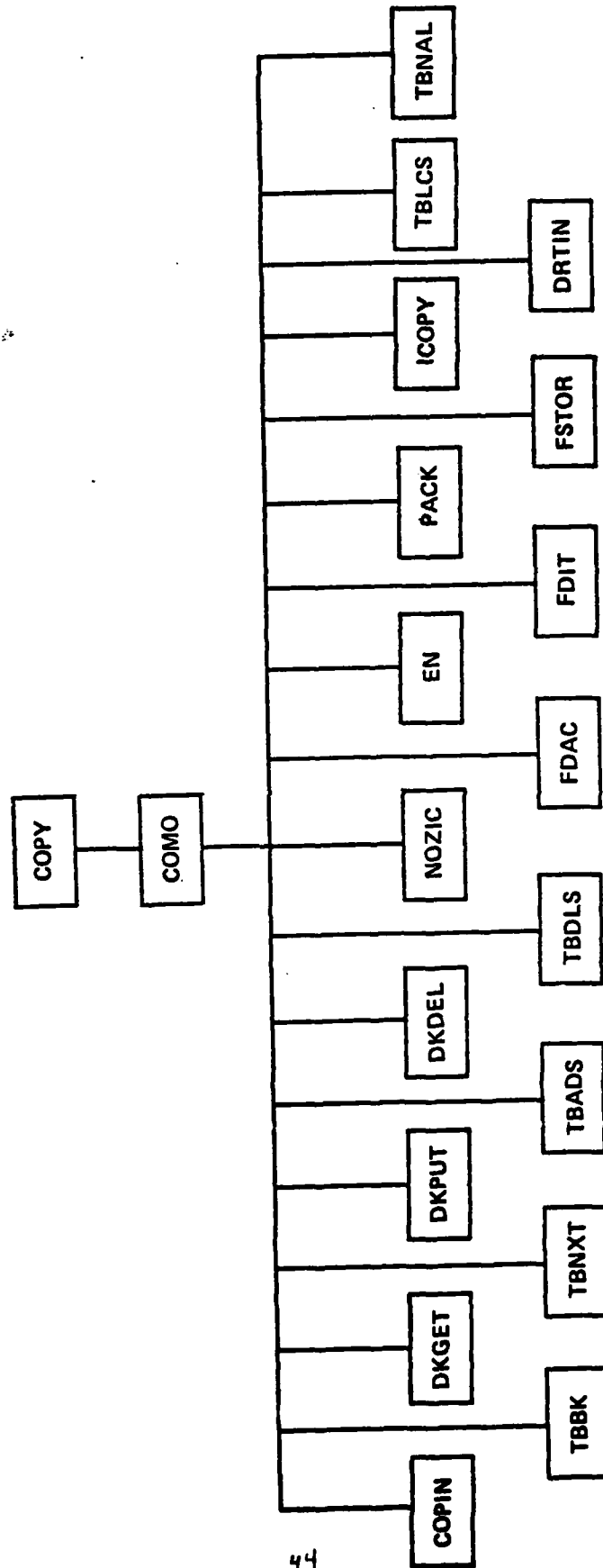
COMMAND .COPY.

Figure   Command .COPY.

44

SUBROUTINE FLOW DIAGRAM

COMMAND: .DELE.
ROUTINE: DELET

— — — — HIGH LEVEL ROUTINE

— — — — BASIC ROUTINE

COMMAND DELET

Figure   Command DELET   Sheet 1 of 1

DOCUMENT COMMAND

SHEET 1 OF 1

46

SUBROUTINE FLOW DIAGRAM

COMMAND: .EDIT.
ROUTINE: EDIT
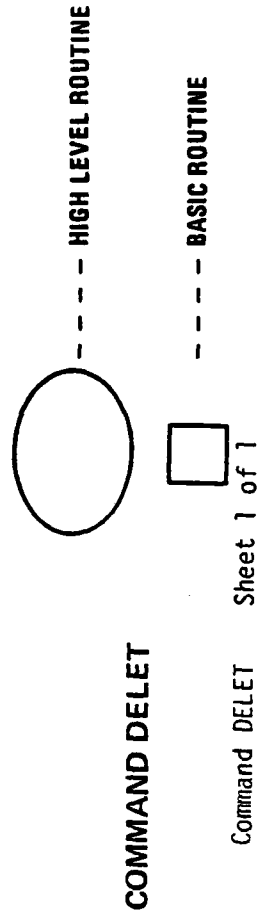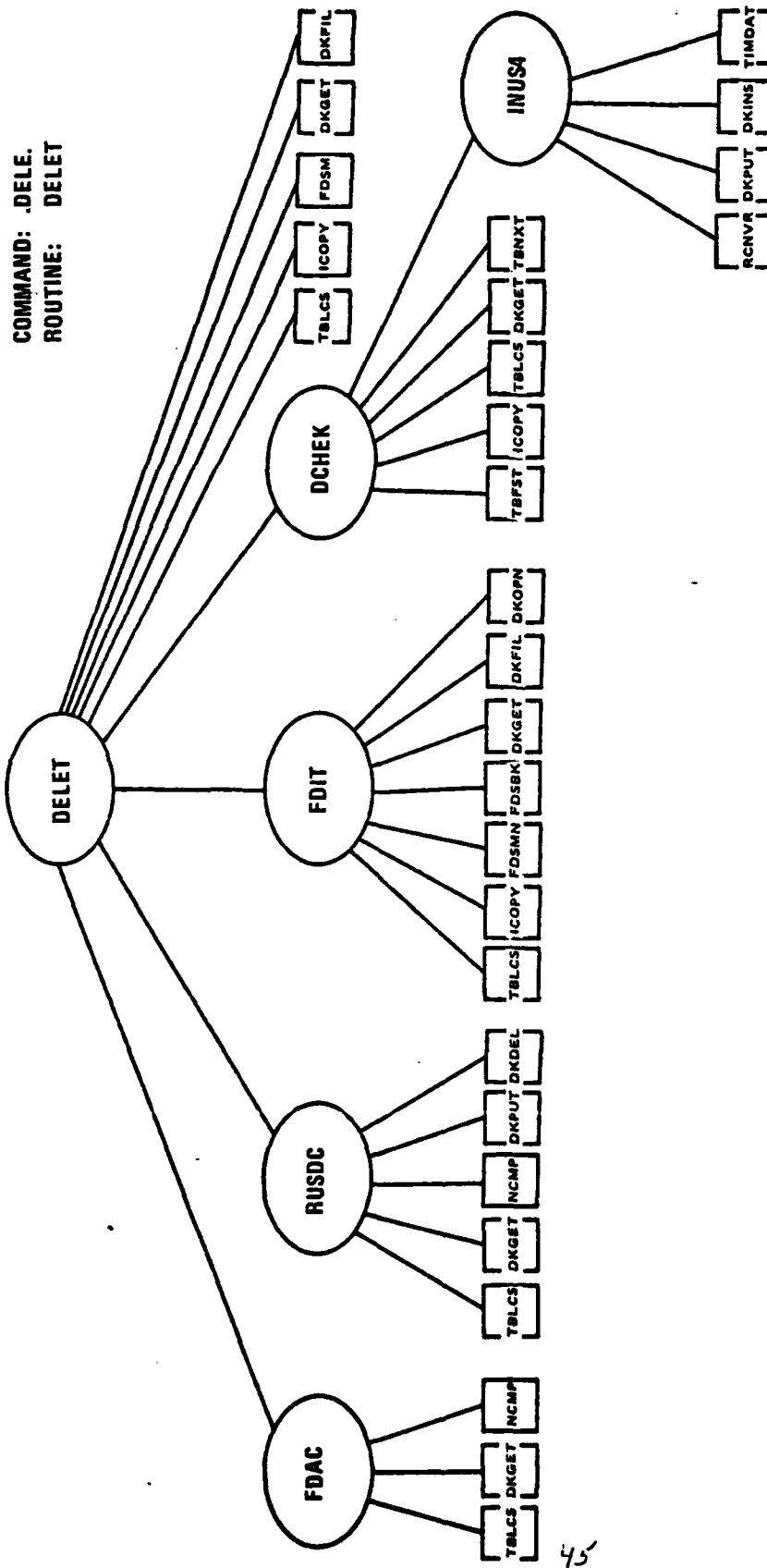
- - - - HIGH-LEVEL ROUTINE
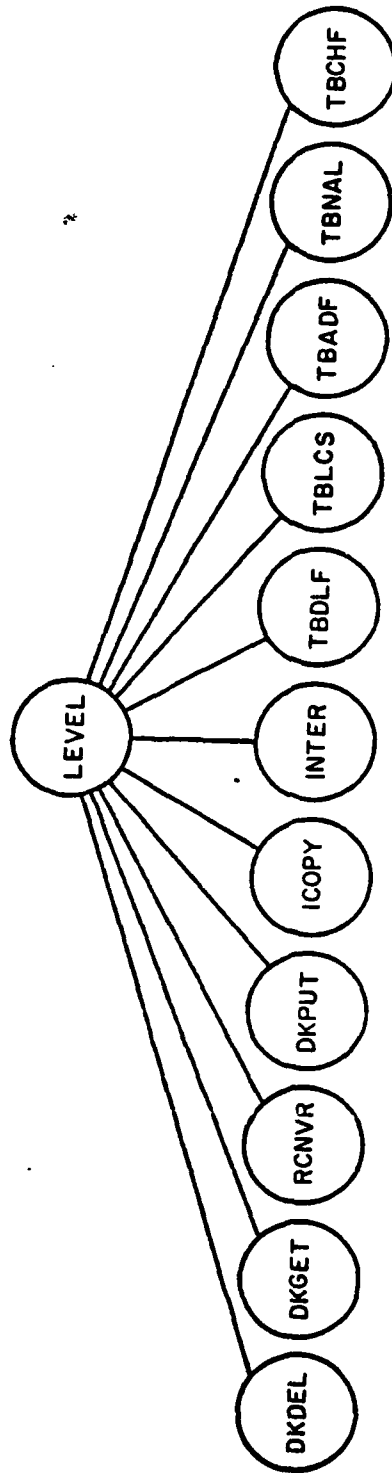
- - - - BASIC ROUTINE
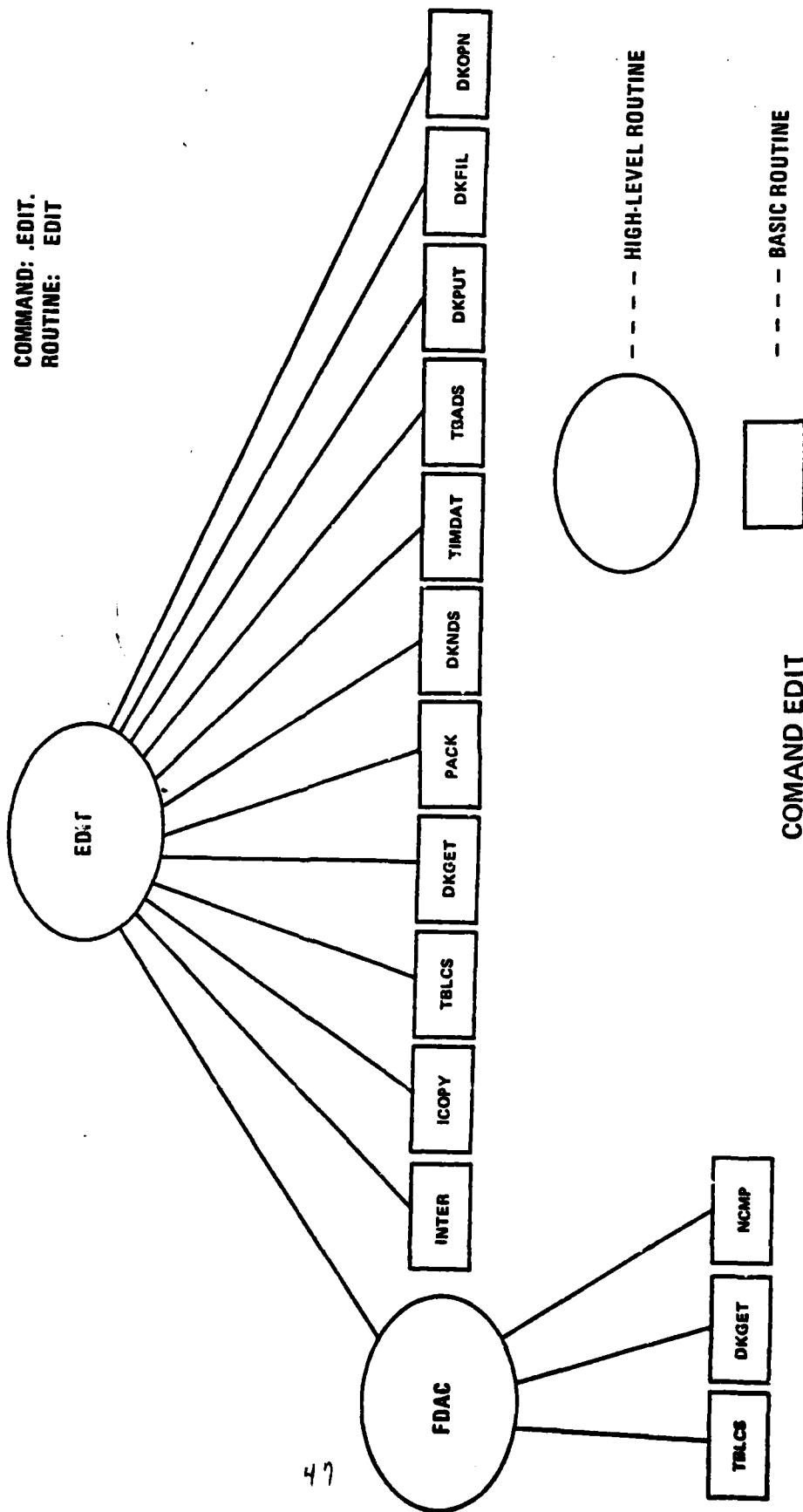
COMAND EDIT

Figure   Command EDIT   Sheet 1 of 1

47

ENTER

48
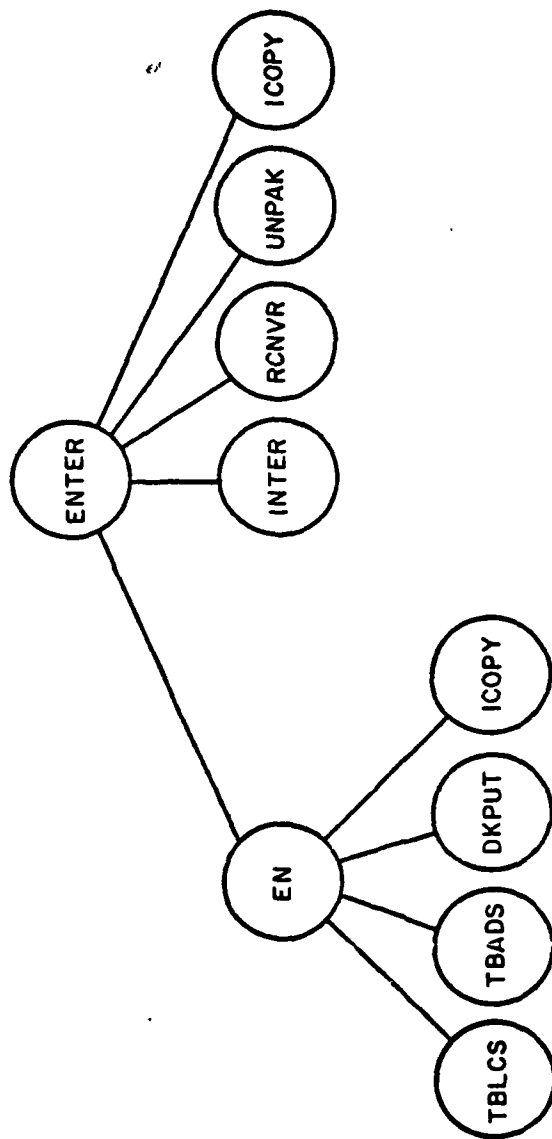
SUBROUTINE FLOW DIAGRAM

COMMAND: .EXEC.
ROUTINE: EXECS

--- HIGH LEVEL ROUTINE
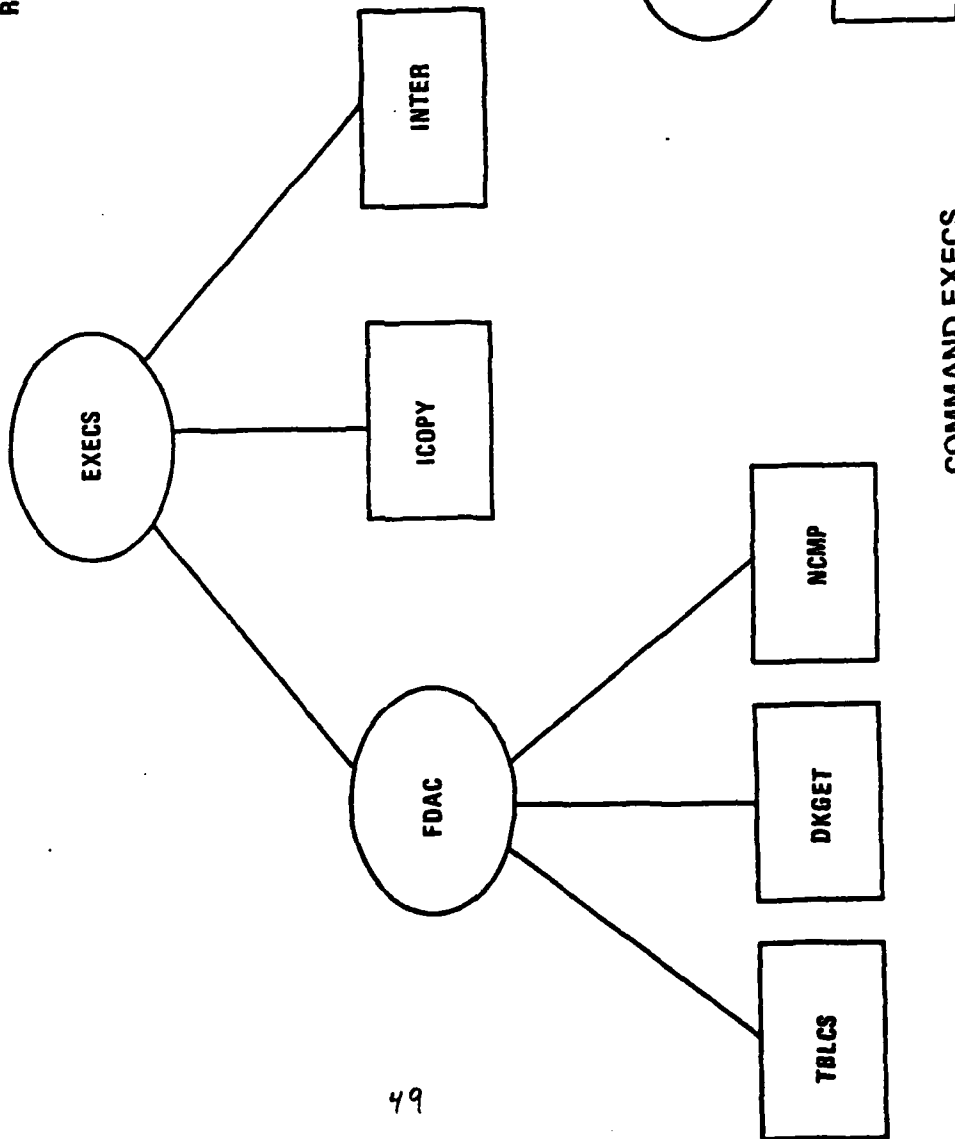
--- BASIC ROUTINE

COMMAND EXECS

Figure   Command EXECS   Sheet 1 of 1

49

SUBROUTINE FLOW DIAGRAM

COMMAND: .EX.
ROUTINE: EXECT

```
        ┌─────────┐
        │  EXECT  │
        └────┬────┘
      ┌──────┴──────┐
 ┌─────────┐   ┌─────────┐
 │  INTER  │   │  TBLCS  │
 └─────────┘   └─────────┘
```

- - - - HIGH LEVEL ROUTINE

- - - - BASIC ROUTINE

COMMAND EXECT

Figure   Command EXECT   Sheet 1 of 1

FLGCH
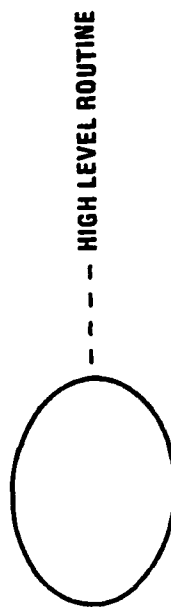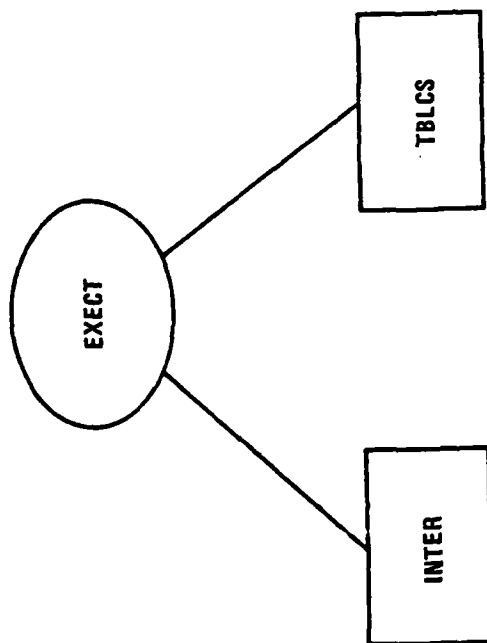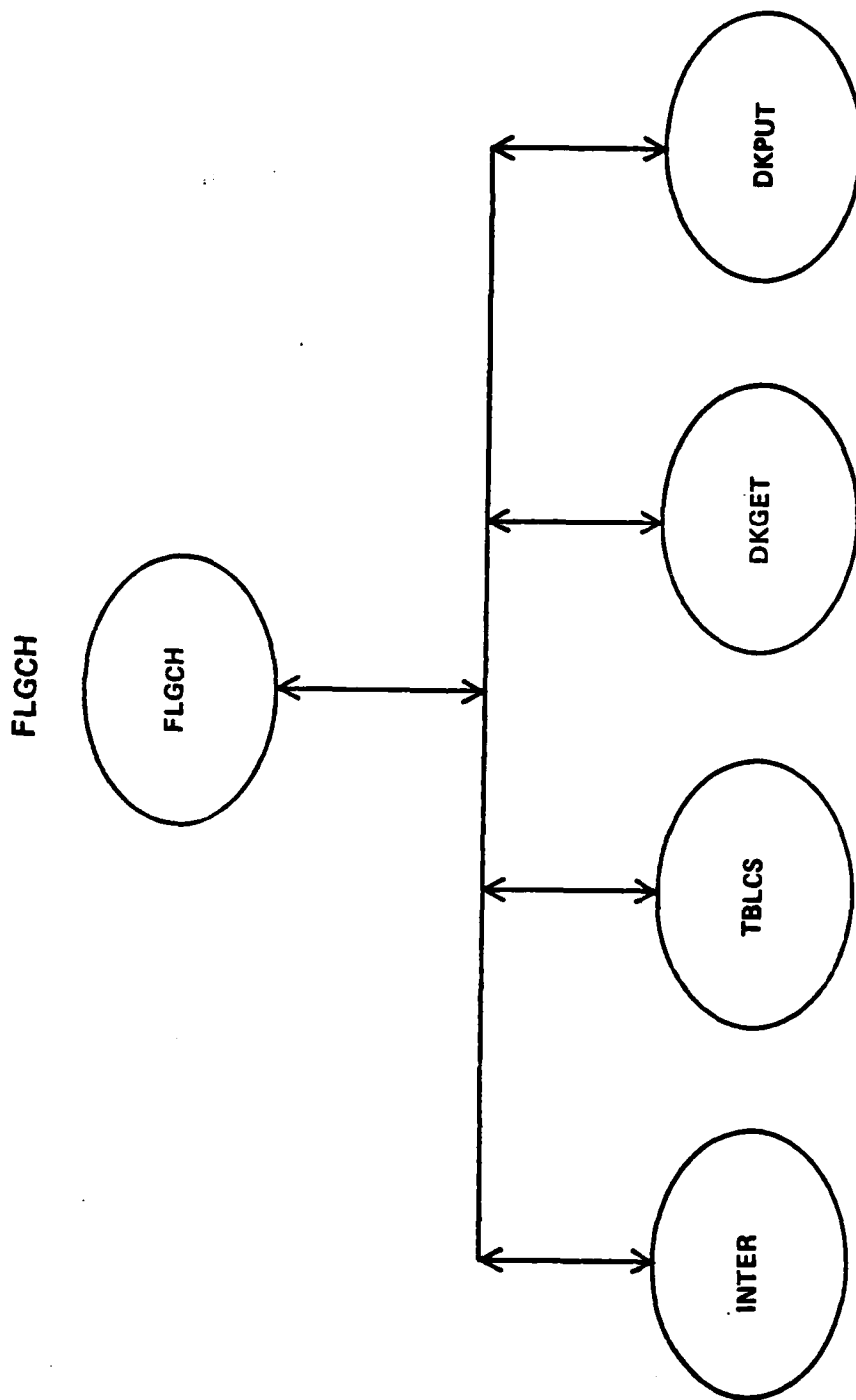
COMMAND . FL.

Figure   Command .FL.   Sheet 1 of 1
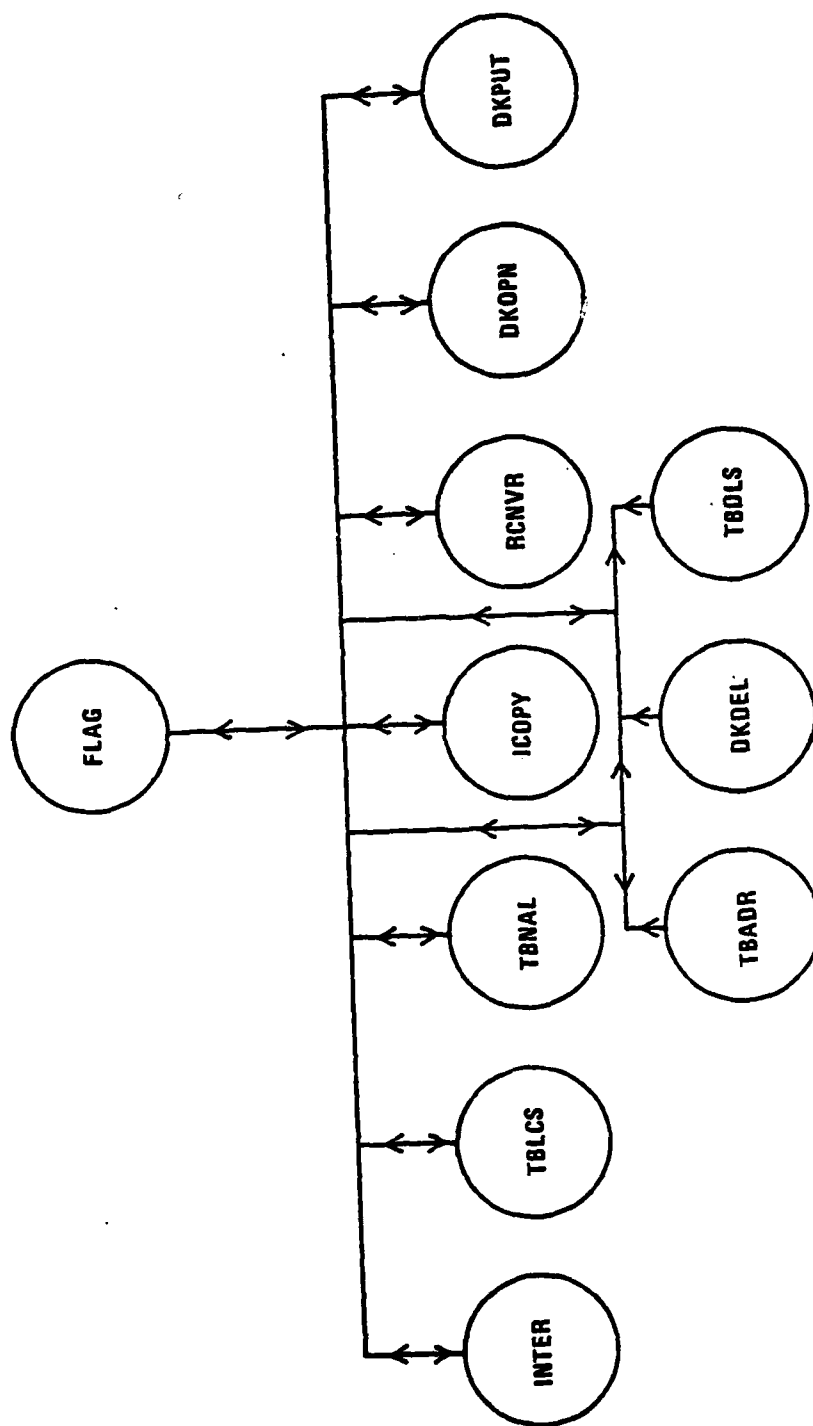
FLAG COMMAND

Figure   Flag Command   Sheet 1 of 1

52
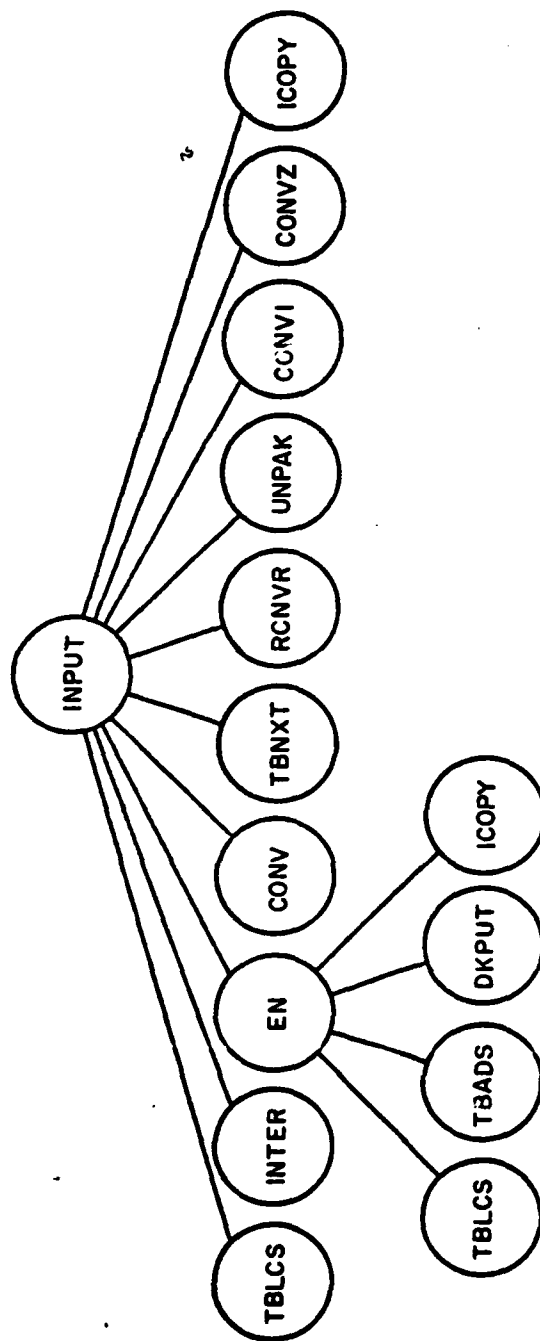
INPUT COMMAND

SHEET 1 OF 1

52

LIST COMMAND

54
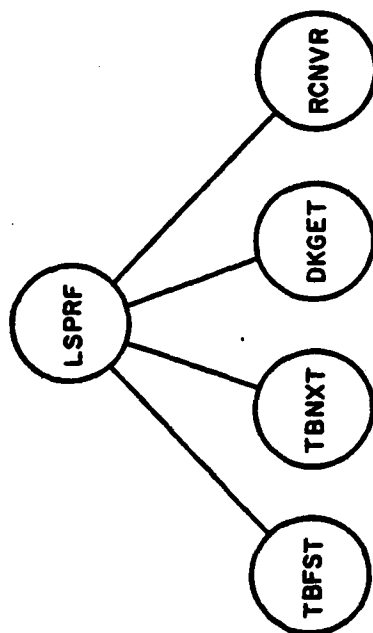
COMMAND: LIST
PROGRAM NAME LIST

COMMAND .LIST.
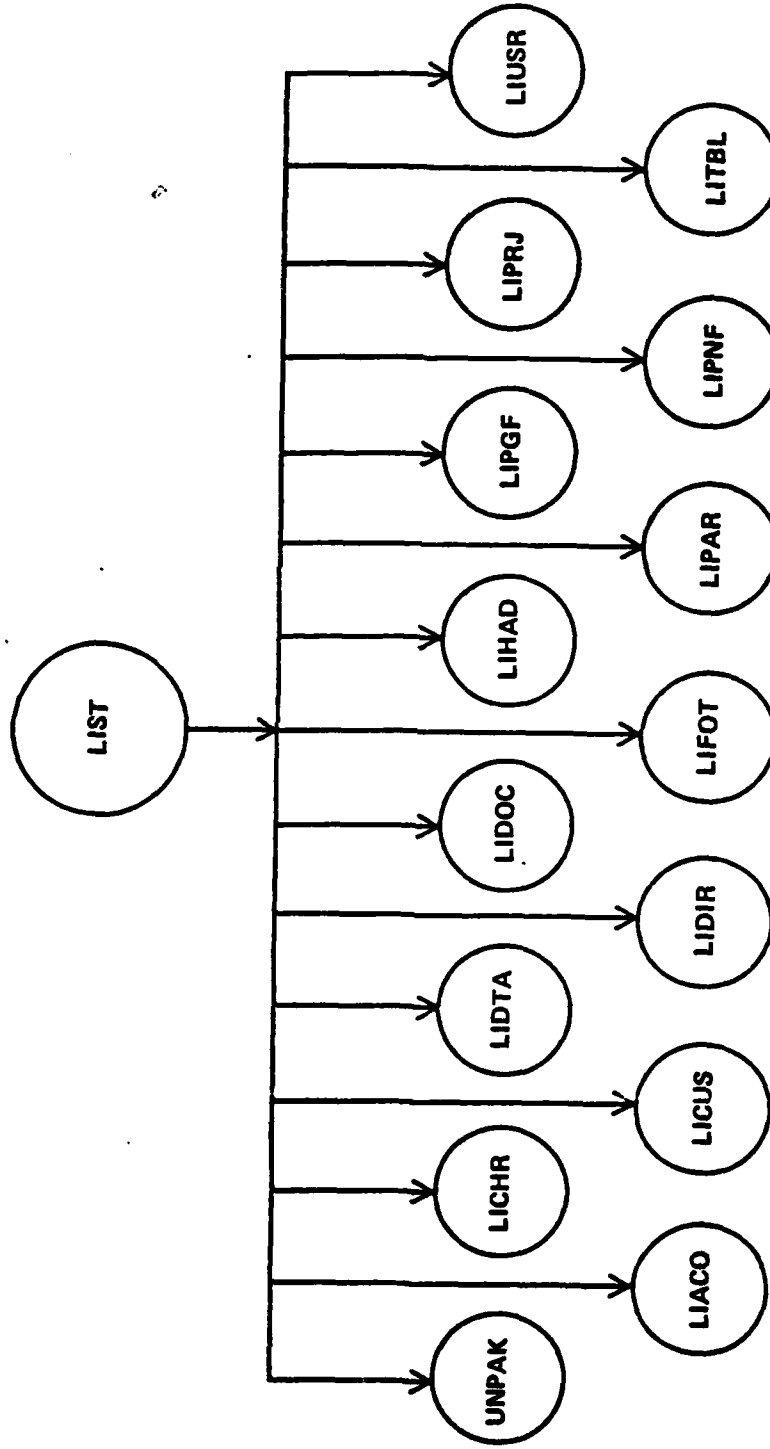
Figure   Command .LIST.   Sheet 1 of 1
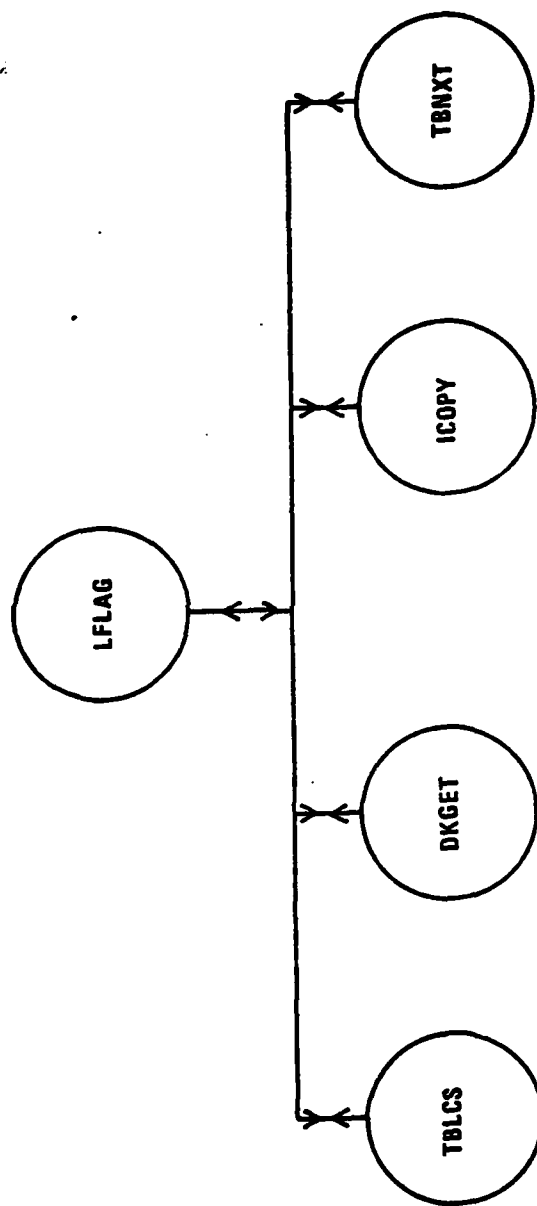
LIST FLAG COMMAND

Figure   LIST FLAG Command   Sheet 1 of 1

56

SUBROUTINE FLOW DIAGRAM

COMMAND: .LOGOF.
ROUTINE: LOGOF
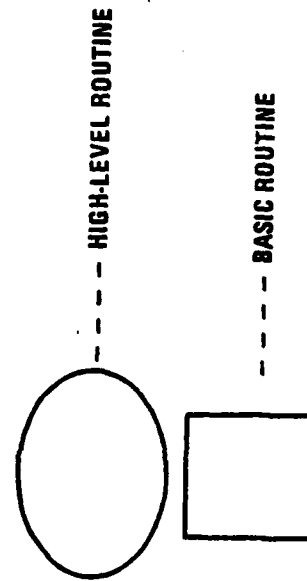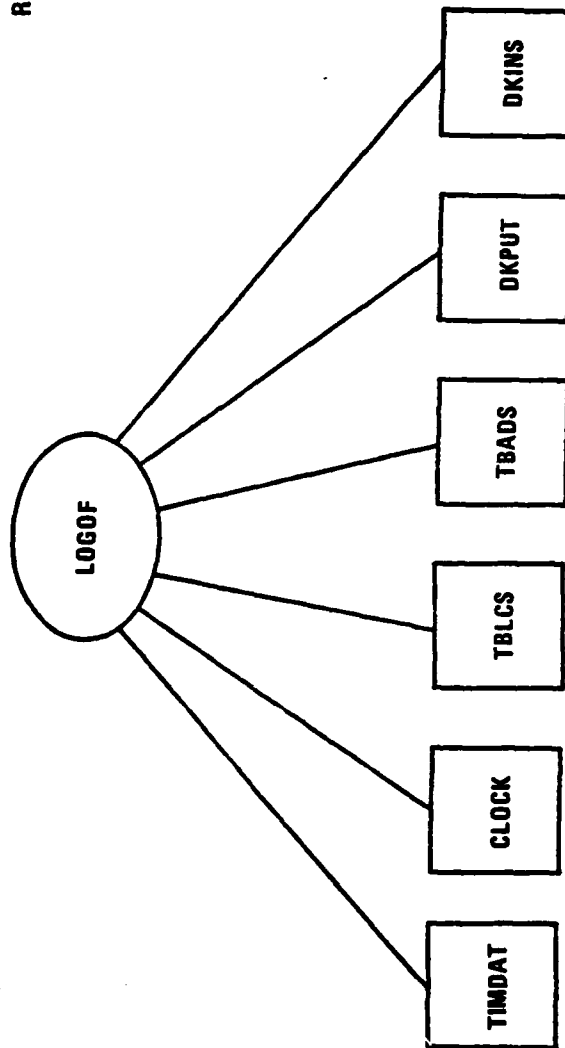
COMMAND LOGOF

Figure   Command LOGOF   Sheet 1 of 1

57

SUBROUTINE FLOW DIAGRAM

COMMAND: .LOGON.
ROUTINE: LOGON

```
                    ┌───────┐
                    │ CLOCK │
                    └───────┘
                    ┌───────┐
                    │ DKOPN │
                    └───────┘
                    ┌───────┐
                    │ NCMP  │
                    └───────┘
          ┌───────┐ ┌───────┐
          │ LOGON │─│ DKGET │
          └───────┘ └───────┘
                    ┌───────┐
                    │ TBLCS │
                    └───────┘
                    ┌───────┐
                    │ DKPUT │
                    └───────┘
                    ┌───────┐
                    │ TBDAS │
                    └───────┘
                    ┌───────┐
                    │ TBMAK │
                    └───────┘
                    ┌───────┐
                    │ ICOPY │
                    └───────┘
                    ┌───────┐
                    │ TIMDAT│
                    └───────┘
```

- - - HIGH-LEVEL ROUTINE

- - - BASIC ROUTINE

```
          ┌───────┐
          │ LOGOF │
          └───────┘
            │ TBLCS
            │ CLOCK
            │ TIMDAT
```

DKINS   DKPUT   TBADS
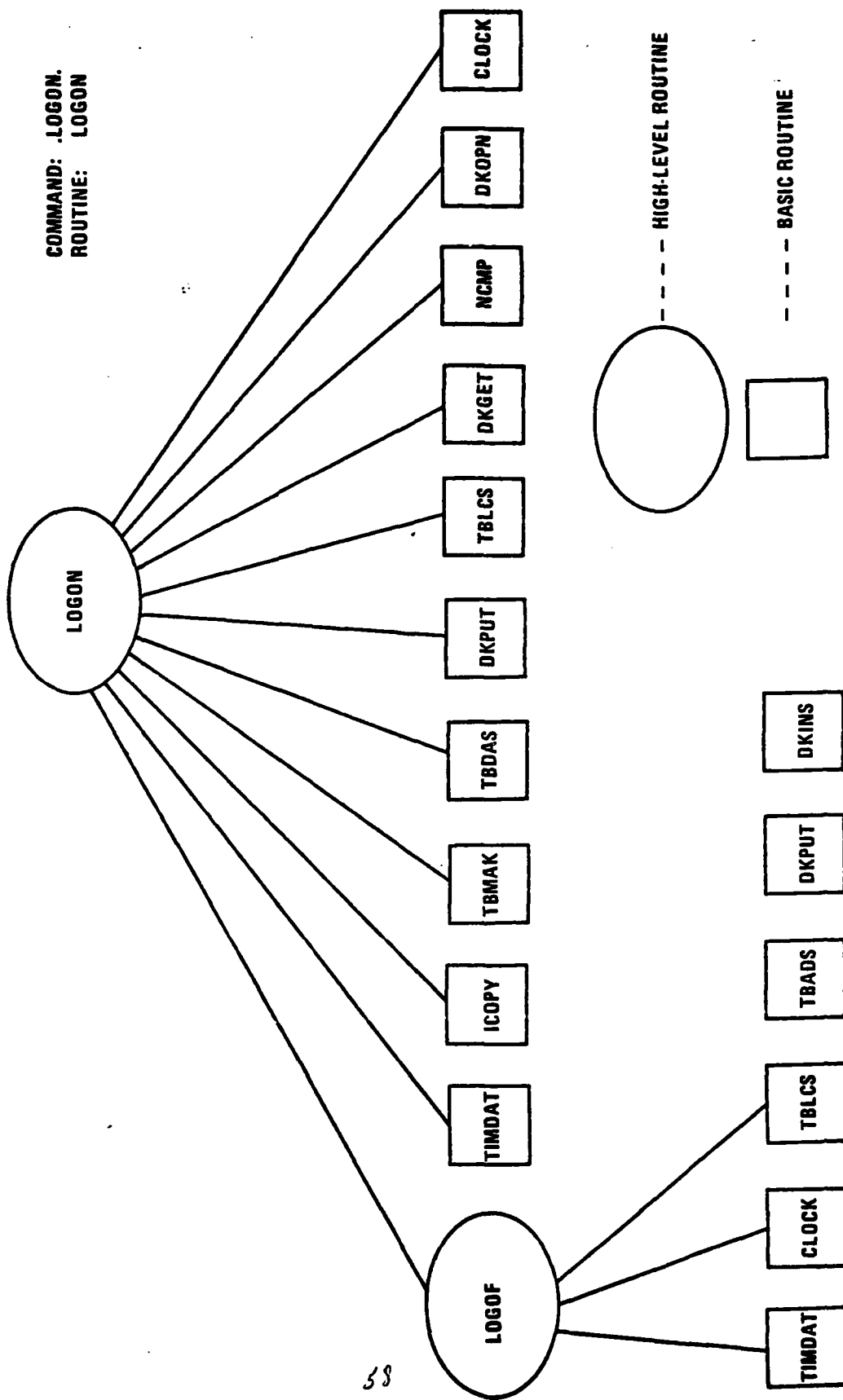
COMMAND LOGON

Figure   Command LOGON   Sheet 1 of 1

58

SUBROUTINE FLOW DIAGRAM

COMMAND: .NEW.
ROUTINE: NEW

NEW

KCOPY PACK UNPAK INTER DKNDS TBLCS TBADS DKPUT DKGET DKINS DKLOS TIMDAT

⎯⎯ HIGH LEVEL ROUTINE

⎯⎯ BASIC ROUTINE
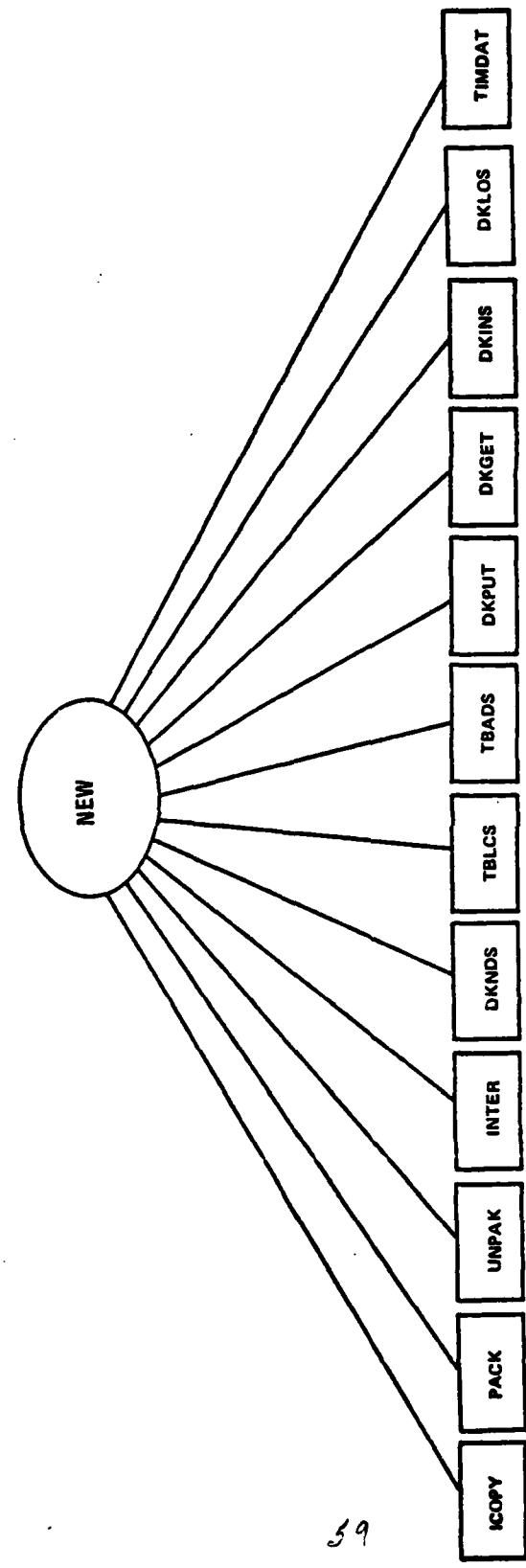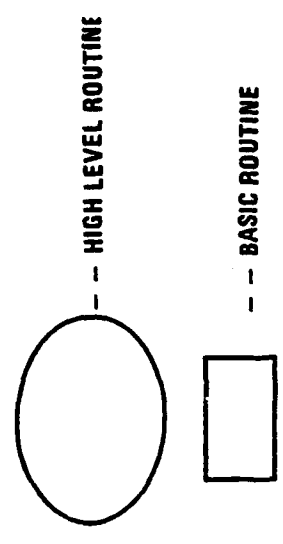
COMAND NEW

Figure   Command NEW   Sheet 1 of 1

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PARFM COMMAND
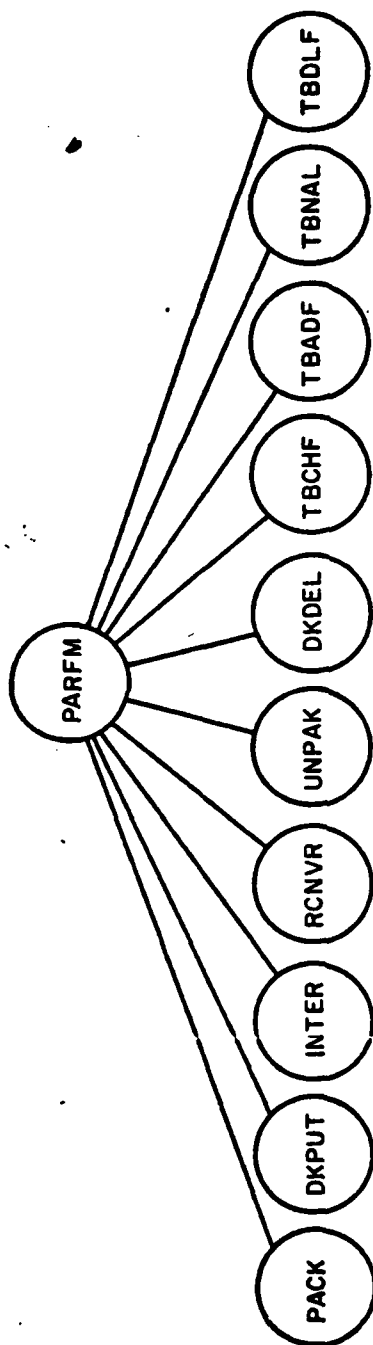
COMMAND .PASS.
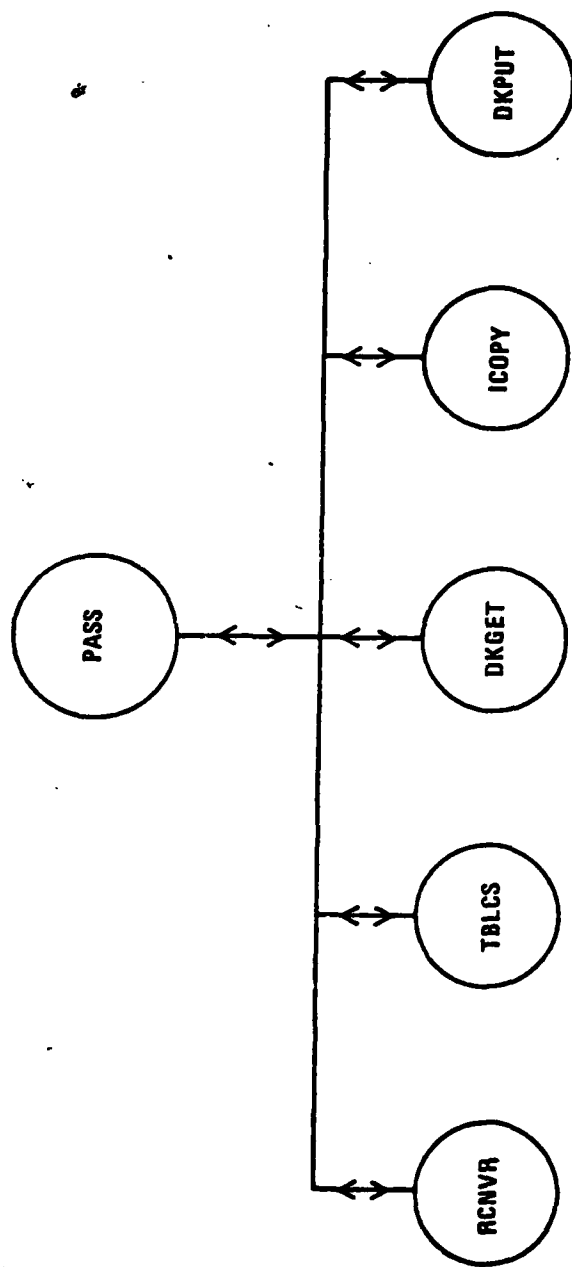
Figure   Command .PASS.   Sheet 1 of 1

COMMAND: .PGNF (PROGRAM NAME IS NOFOR)
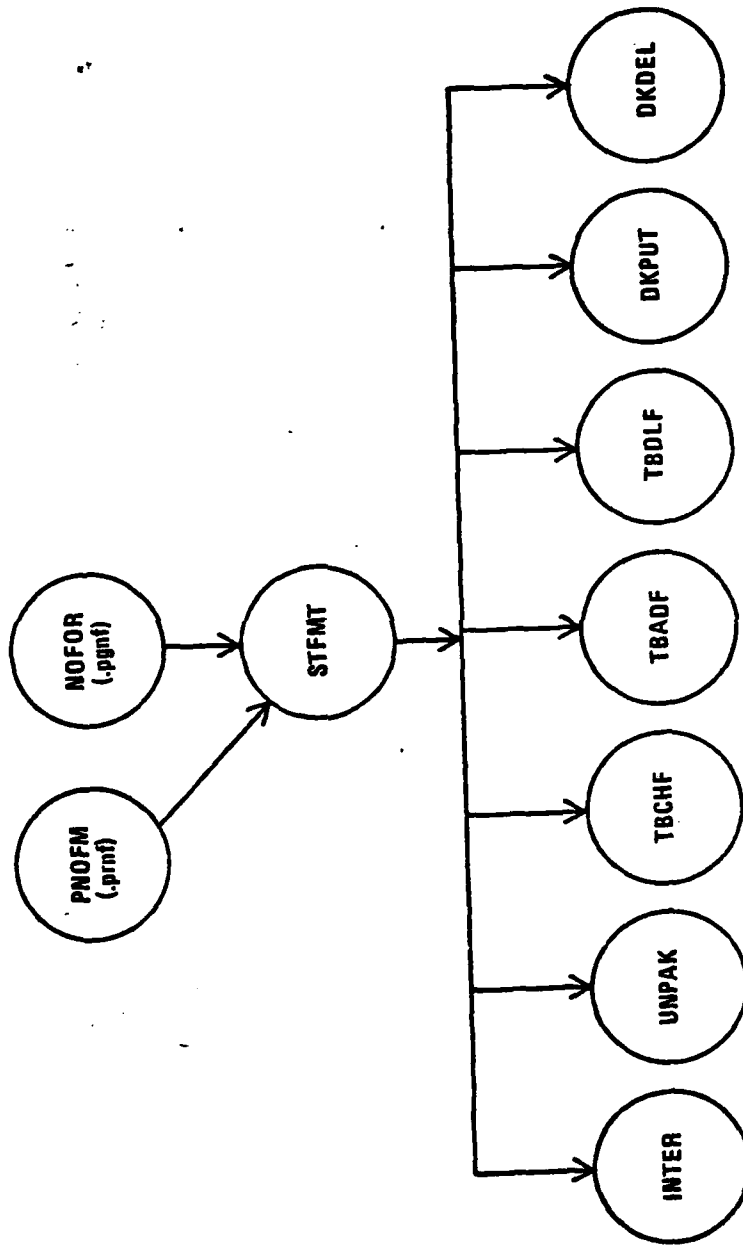
NOTE: STFMT IS A COMMON SUBROUTINE FOR NOFOR (.pgnf) AND PNOFM (.prnf).

COMMAND. PGNF.

Figure   Command .PGNF.   Sheet 1 of 1
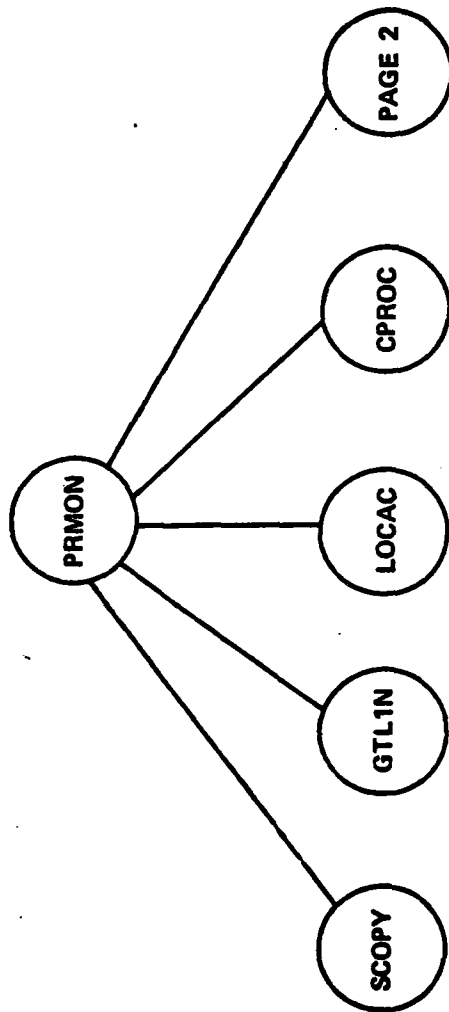
62

PRINT COMAND

Figure   Print Command   Sheet 1 of 20

63
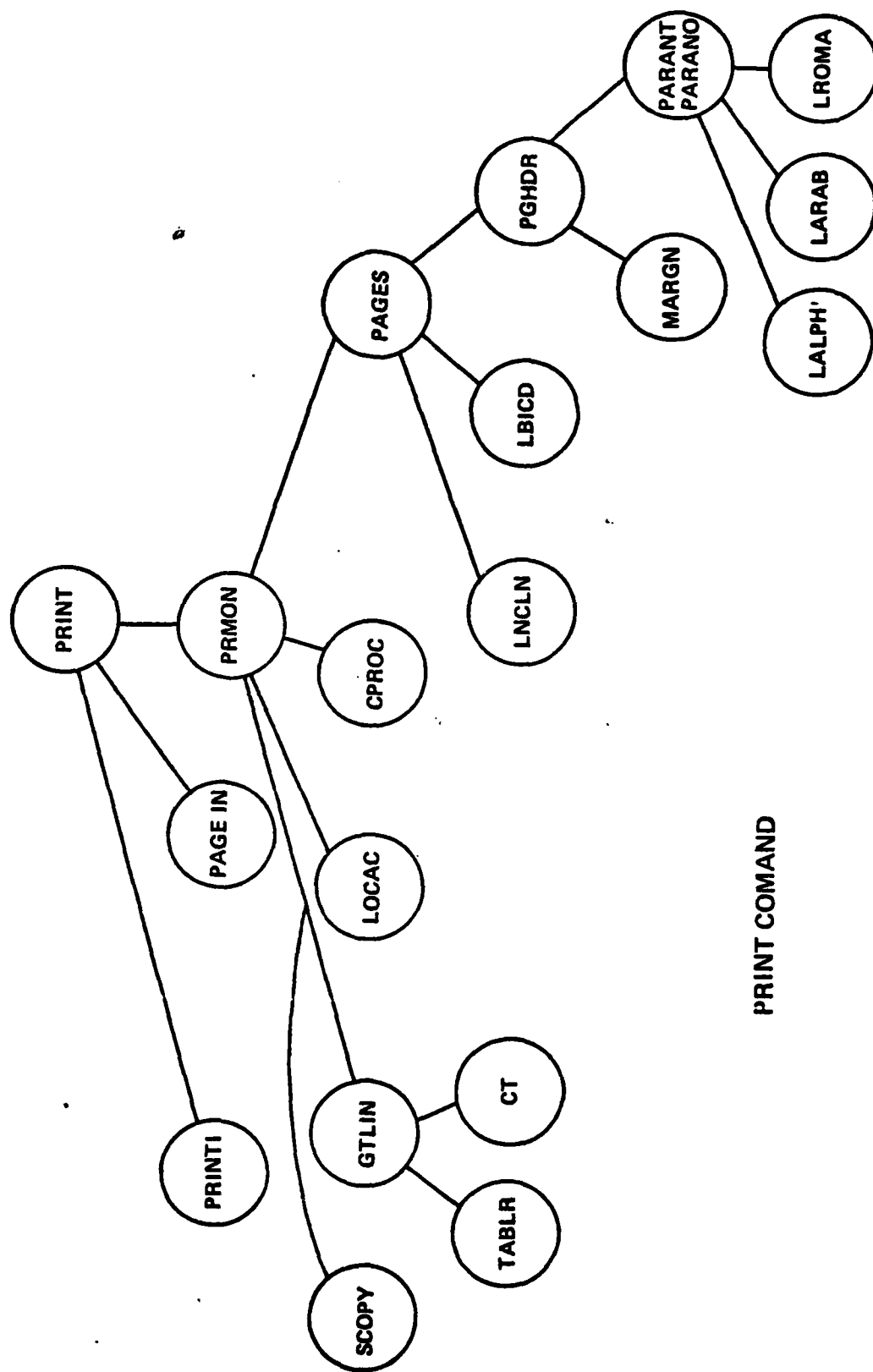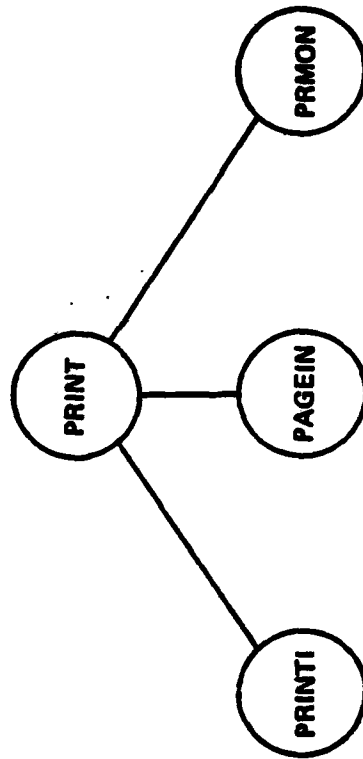
PRINT COMAND

Figure   Print Command   Sheet 2 of 20

64
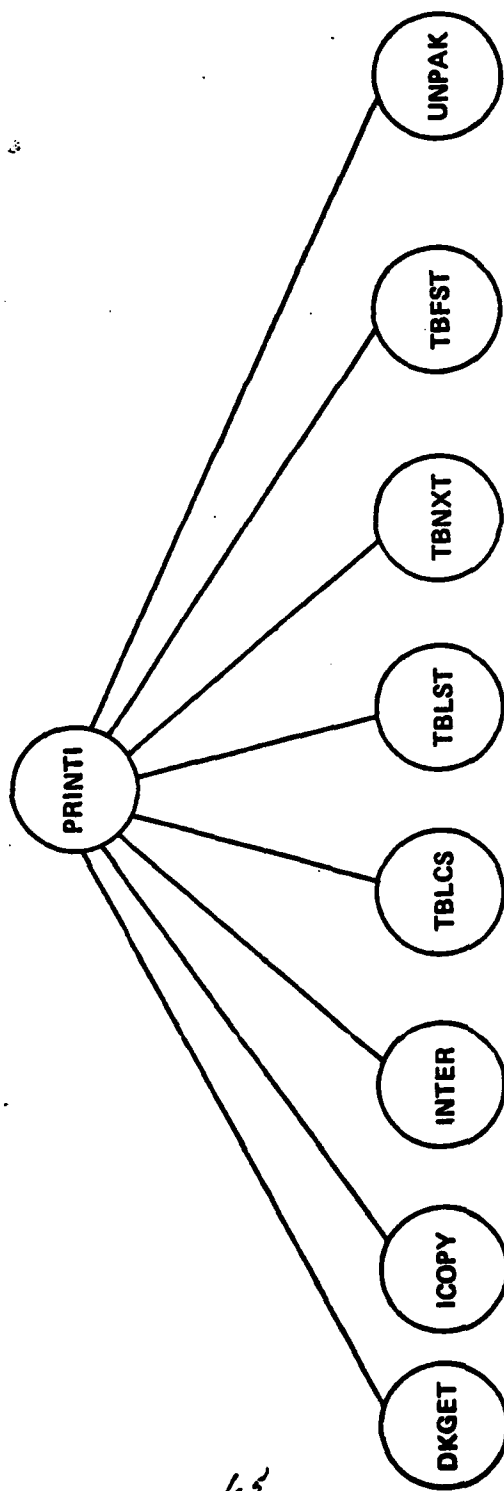
PRINT COMAND

Figure   Print Command   Sheet 3 of 20
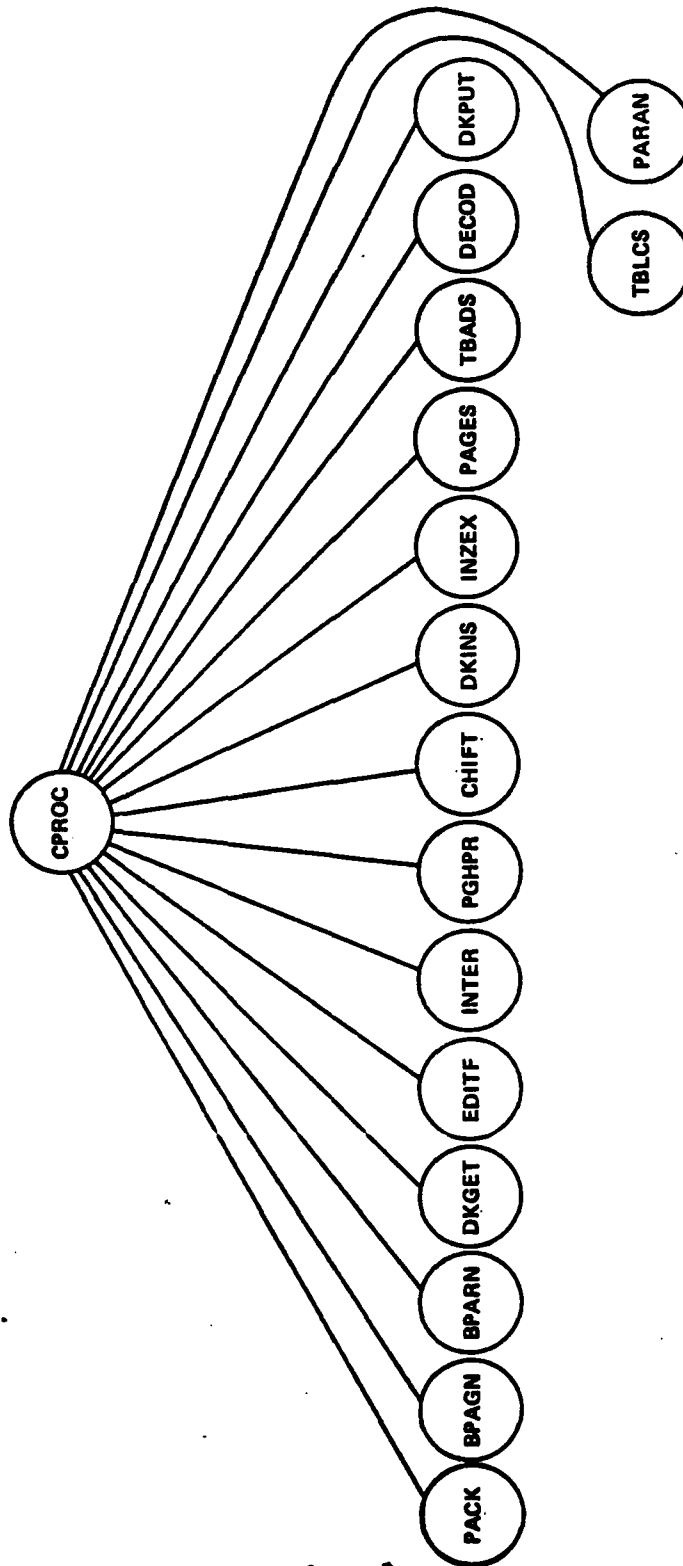
Figure   Print Command   Sheet 9 of 20

66
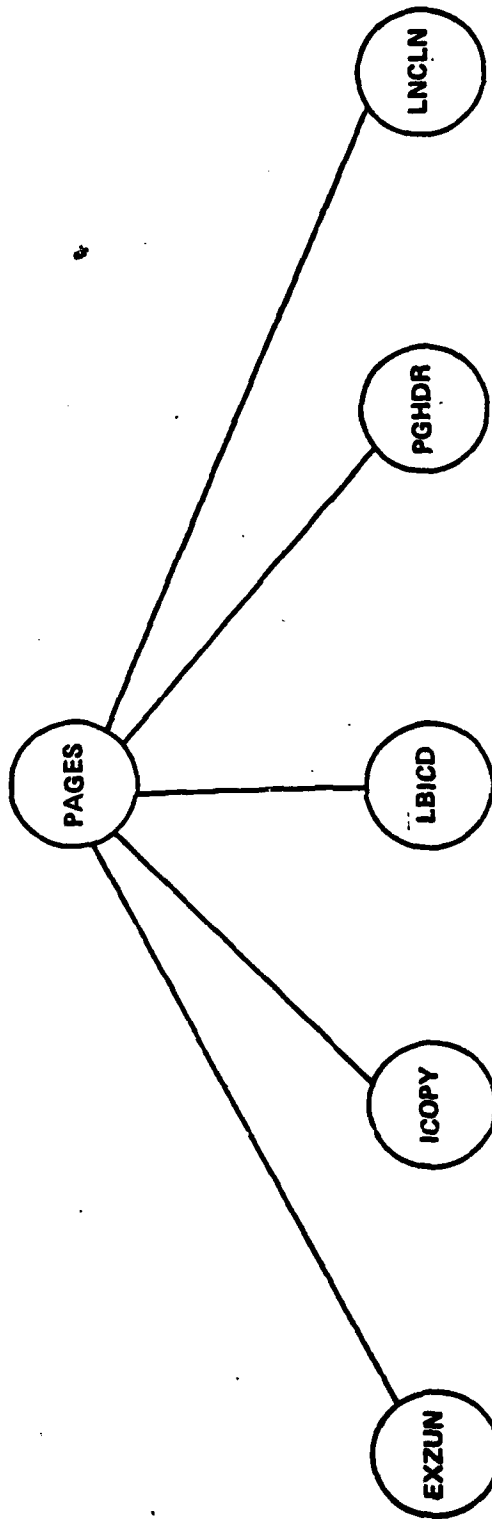
PRINT COMAND

Figure   Print Command   Sheet 10 of 20

PRINT COMAND

Figure   Print Command   Sheet 15 of 20
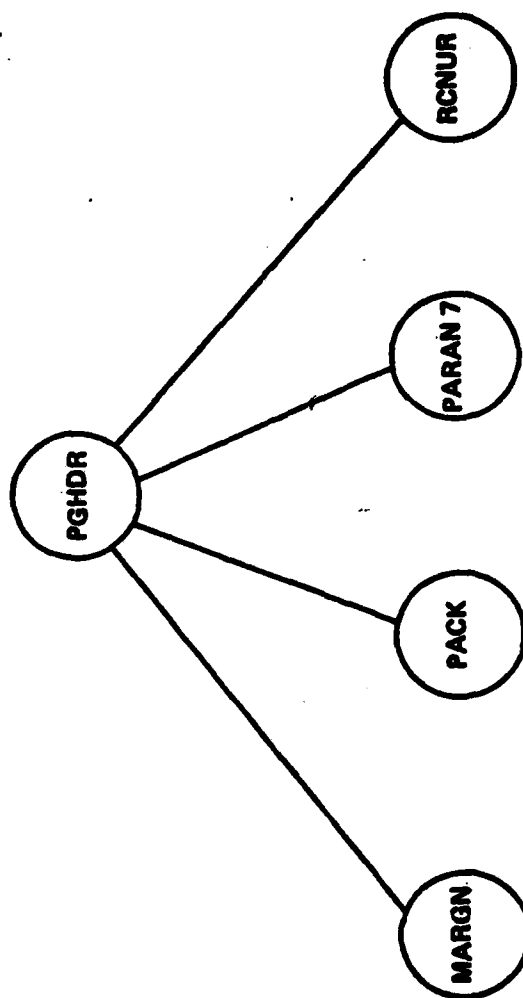
PRINT COMAND

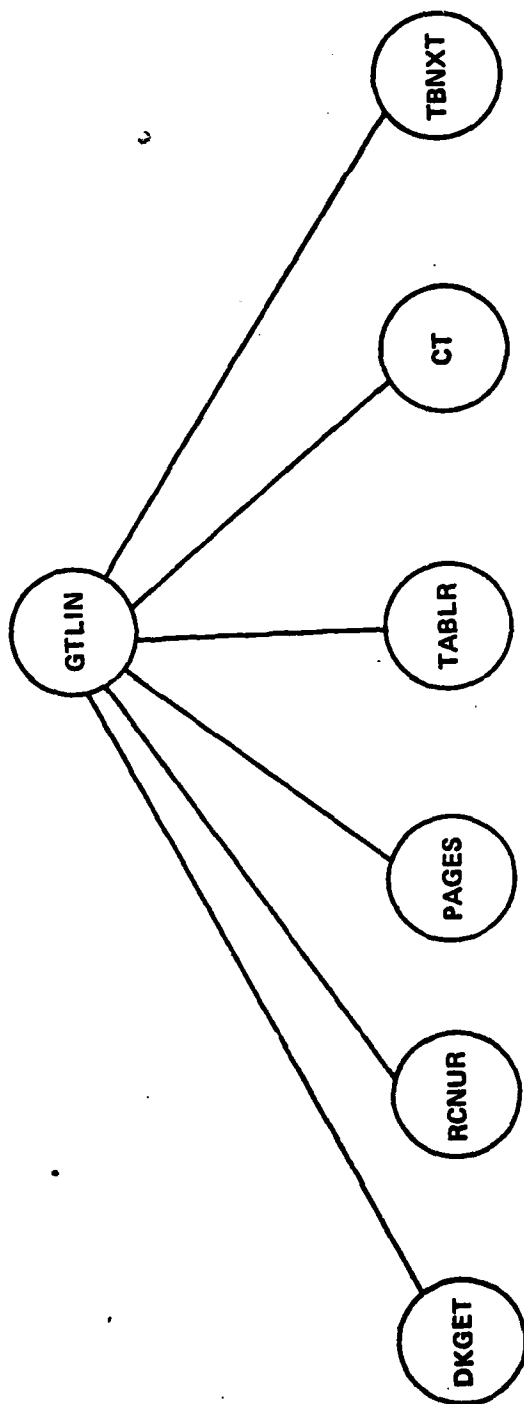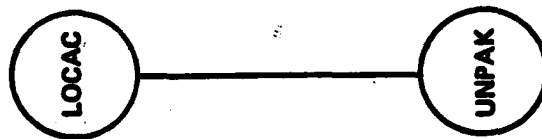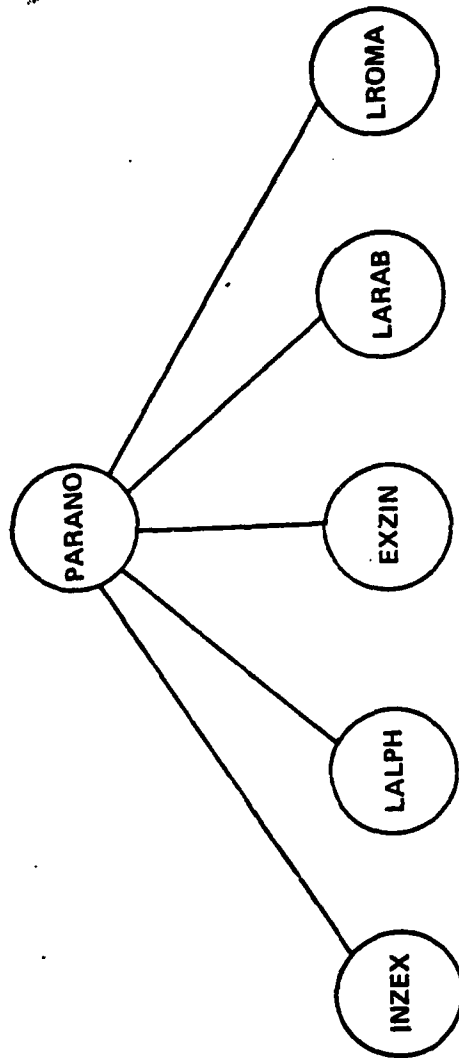Figure   Print Command   Sheet 16 of 20

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PRINT COMAND

Figure   Print Command   Sheet 17 of 20
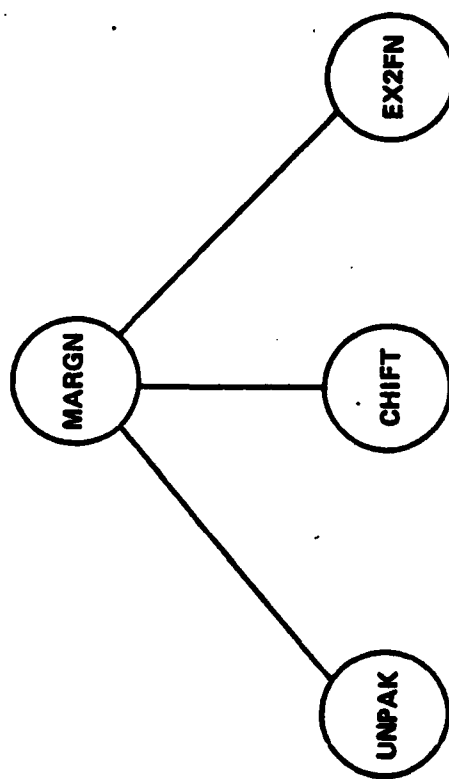
PRINT COMAND

Figure   Print Command   Sheet 18 of 20

21
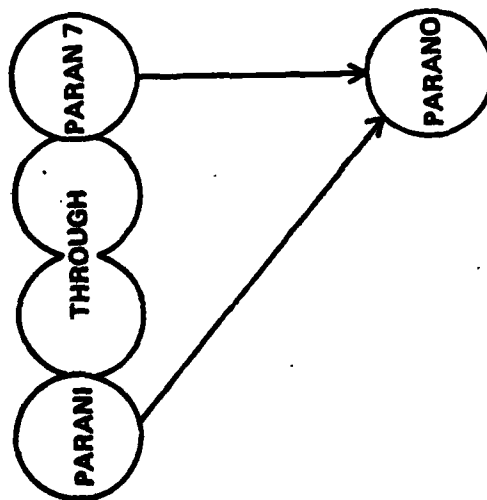
PRINT COMAND

Figure   Print Command   Sheet 19 of 20

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PRINT COMAND

Figure   PRINT Command   Sheet 5 of 20

PRINT COMMAND

Figure   PRINT Command   Sheet 7 of 20
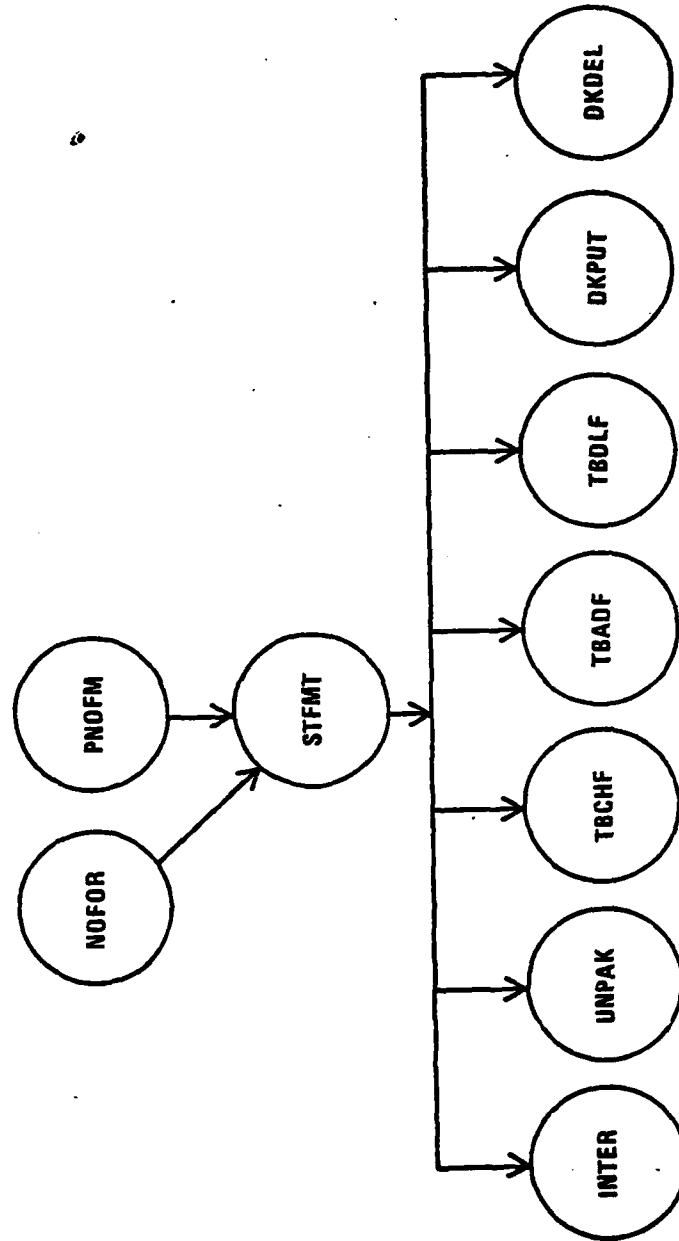
74

PRINT COMAND

Figure   PRINT Command   Sheet 8 of 20

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PRINT COMAND

Figure   PRINT Command   Sheet 20 of 20

COMMAND: .prnf (PROGRAM NAME IS PNOFM)

NOTE: STFMT IS A COMMON SUBROUTINE FOR PNOFM (.prnf) AND NOFOR (.pgnf).
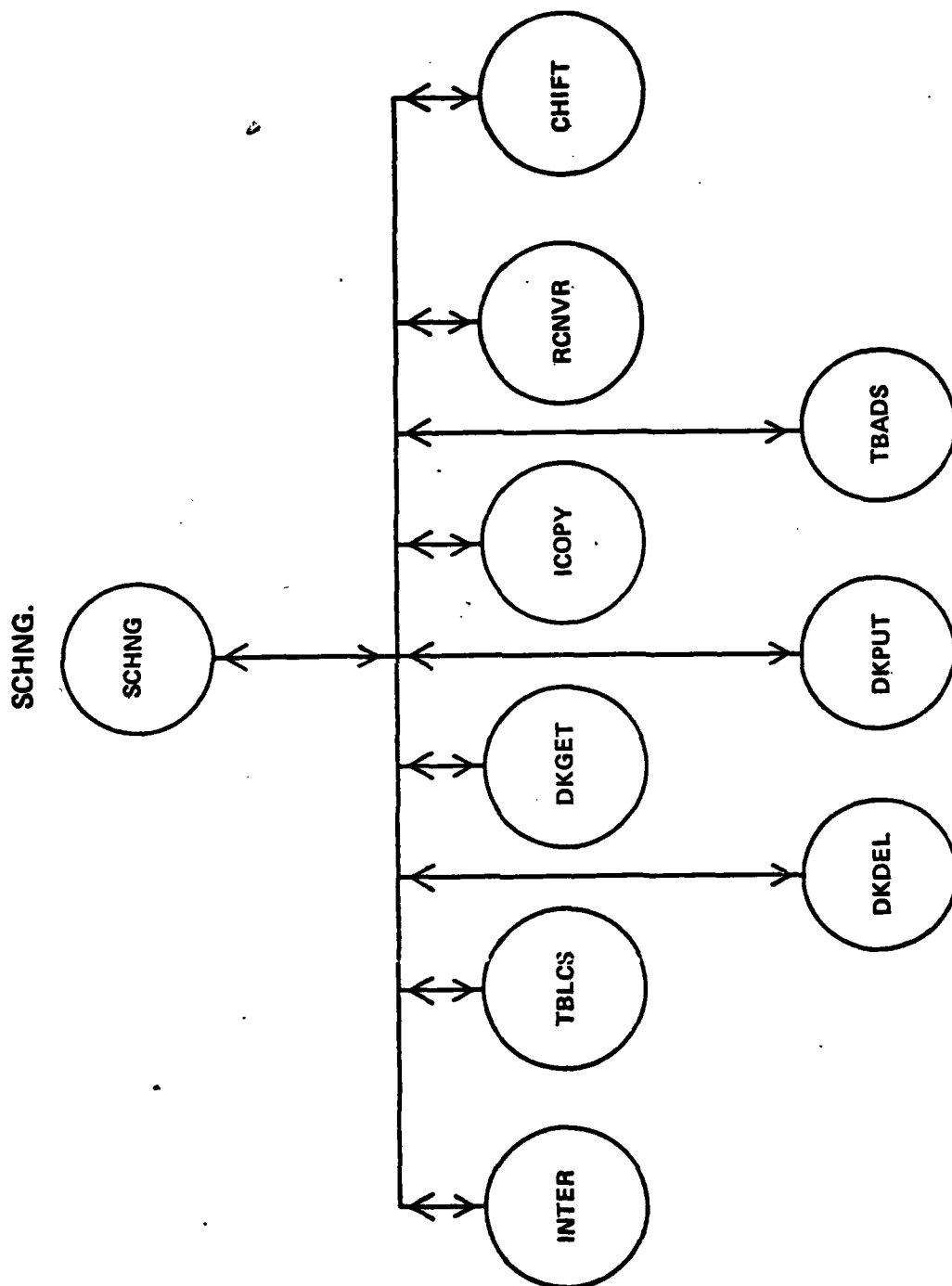
COMMAND .PRNF.

Figure   Command .PRNF.   Sheet 1 of 1

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SCHNG.

Figure   Command .SC.   Sheet 1 of 1

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SUBROUTINE FLOW DIAGRAM

COMMAND: .STOR.
ROUTINE: STORE

```
              STORE
          /     |     \
         /      |      \
      INTER   DKCBF   DKLOS
```

COMMAND STORE

( ) ---- HIGH LEVEL ROUTINE
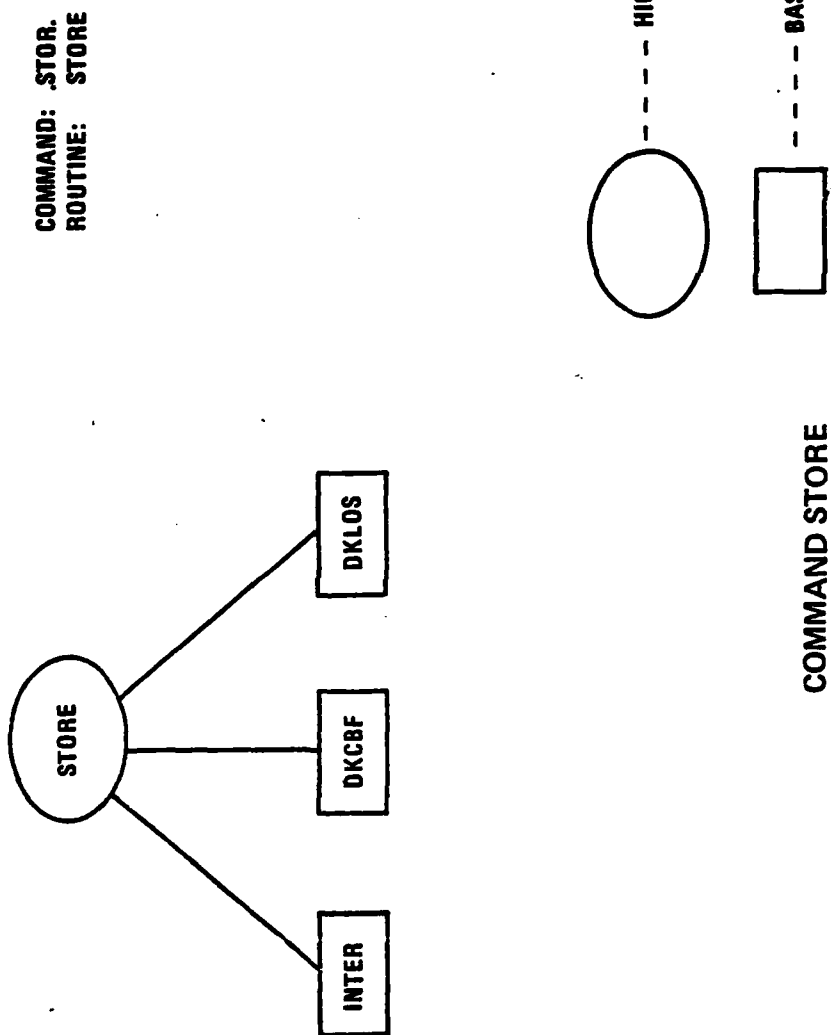
[ ] ---- BASIC ROUTINE

Figure   Command STORE   Sheet 1 of 1

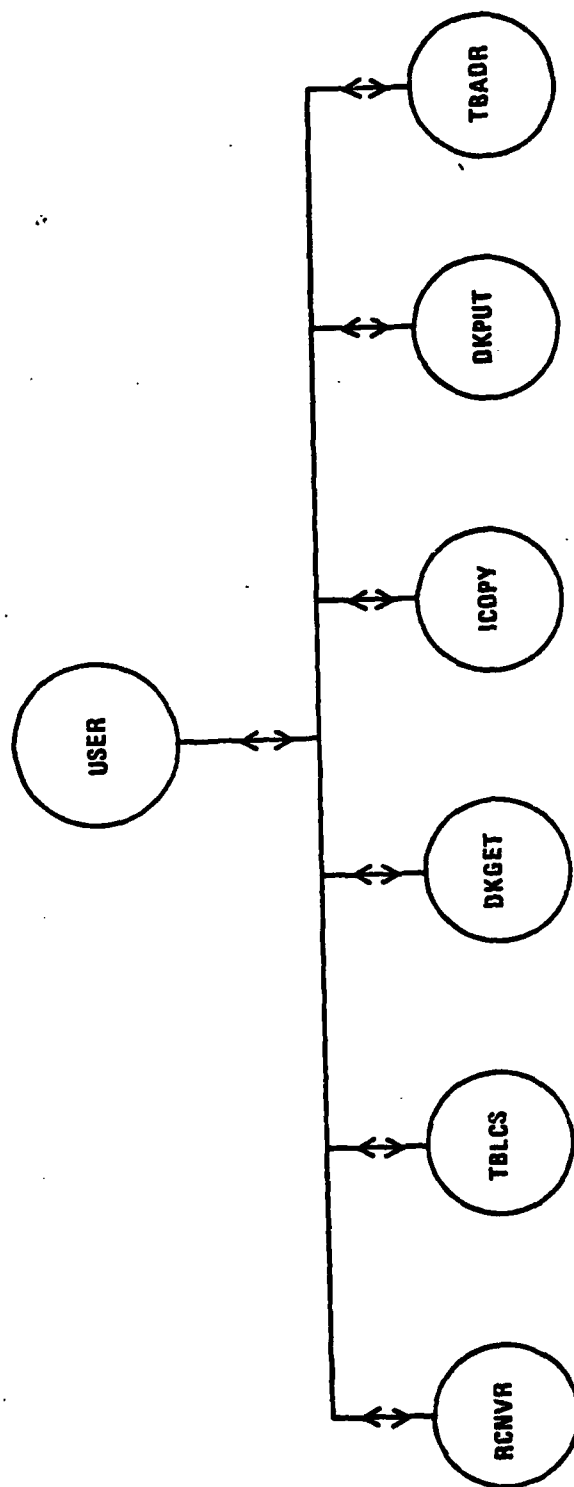## USER COMMAND

Figure   USER command   Sheet 1 of 1

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DATE
ILMED

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